

Child Support Enforcement: Net Impacts on Work & Welfare Outcomes pre- & post-PRWORA

~ Technical Report ~

Washington State Division of Child Support
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Abstract

This paper is a technical report expanding our previous study¹ on the effects of child support enforcement (CSE) on public expenditures in direct support programs. A non-technical policy brief is also available². We have previously reported¹ that regular child support payments under AFDC are associated with reduced custodial parent public assistance costs, arising mainly from a reduction in recidivism rates.

The investigation is expanded first by including a study of welfare outcomes under TANF. Regular child support payments under TANF are also associated with reduced public assistance costs, again arising mainly from a reduction in recidivism rates. This means that a possible similarity between custodial parent and non-custodial parent is not an important factor, since the behavior (controlled rates of welfare exit and of finding or losing work) of custodial parents with regular payments and those without regular payments is not different while they are on welfare. The per client cost offsets are higher under TANF. This is expected if the main effect is a reduction in recidivism, since a larger portion of custodial parents have left welfare under TANF. There is a strong relationship between the percentage of the cohort off welfare in a quarter and the percentage welfare savings attributable to regular child support payments in a quarter - an additional 1% off welfare yields about ½% in incremental savings. This relationship is identical, within statistical confidence limits, for all three cohorts.

Secondly, the investigation is expanded by including a study of work outcomes³ under both AFDC and TANF. In both periods regular child support payments are associated with an increased probability of custodial parent employment. This also appears to be associated with a recidivism effect. The impact on recidivism is stronger if the custodial parent is working while off welfare. This may be because a working custodial parent receiving regular child support payments has two income streams, and hence greater independence. In addition, after 1995 in both AFDC and TANF periods, custodial parents off welfare with

¹ Formoso, Carl (1999), *The Effect of Child Support and Self-Sufficiency Programs on Reducing Direct Support Public Costs*

² Formoso, Carl (2000), *Child Support Enforcement: Net Impacts on Work & Welfare Outcomes pre- & post-PRWORA ~ Policy Brief ~*

³ Our information on work comes from the earnings records maintained by the Washington State Employment Security Department (ESD) and thus includes only earnings covered by unemployment insurance. While some earnings are missed, ESD records are generally thought to be the best source for data on client work records. In this report the terms “working” or “employed” mean that earnings are found in the ESD records, and the terms “not working” or “unemployed” mean that there is no ESD record of earning.

regular child support payments appear to have been finding work faster and staying employed longer than comparable custodial parents without regular payments.

It must be emphasized that both welfare and work effects associated with regular child support payments seem to originate after the custodial parent has left public assistance.

Thirdly, the investigation is expanded by including a study of work and welfare outcomes across time, controlling for changes in economic conditions. The main results compare outcomes in a follow-up period after 4th Quarter 1997 (calendar year) to outcomes in a follow-up period after 4th Quarter 1995. While the results show a lower overall probability for use of welfare after 1997, the reduction is only for those who were not working; for working clients the probability of welfare use after 1997 is actually higher. The results also show a higher overall probability of work after 1997. But the increase in work probability is only for those on welfare; for those off welfare the 1995 and 1997 follow-up periods show little difference. Client flow studies corroborate these results. Relative to 1995 follow-up clients in the 1997 follow-up moved towards being employed while on welfare, and towards being unemployed while off welfare. These results strongly emphasize the importance of CSE for those off welfare; child support payments may be the only formal means of support for many former welfare families.

The study across time also allows us to compare the impact of regular child support payments from late 1993 to early 1999, in three different follow-up periods. There is good consistency in the CSE impact on welfare outcomes for working clients where a decreasing trend in welfare probability is seen, reaching about a 20% reduction in the 5th follow-up quarter. There is also consistency in the CSE impact on work outcomes for those off welfare where an increase in work probability is seen averaging about a 15% increase.

Also included in this report is further study on work and welfare net impacts of other public services which may be accessed by custodial parents, and how other public services may affect the impact of regular child support payments.

Finally, we report a study on the stability of regular child support payments. Using client flow techniques we determine that custodial parents meet our definition¹ of regular child support payments for a mean expected duration of 8 quarters. In about 80% of the cases where a custodial parent no longer meets the regular payment definition, the factor which leads to the change is an increase in the arrearage debt, indicating missed child support payments with no change in the required monthly payment.

¹ Regular child support payments are defined for a given quarter as: sum of ordered monthly payments larger than \$0 with sum of total arrearage debt less than twice the sum of ordered monthly payments. This means that a regular payment is due and that there are less than the equivalent of two lapsed payments.

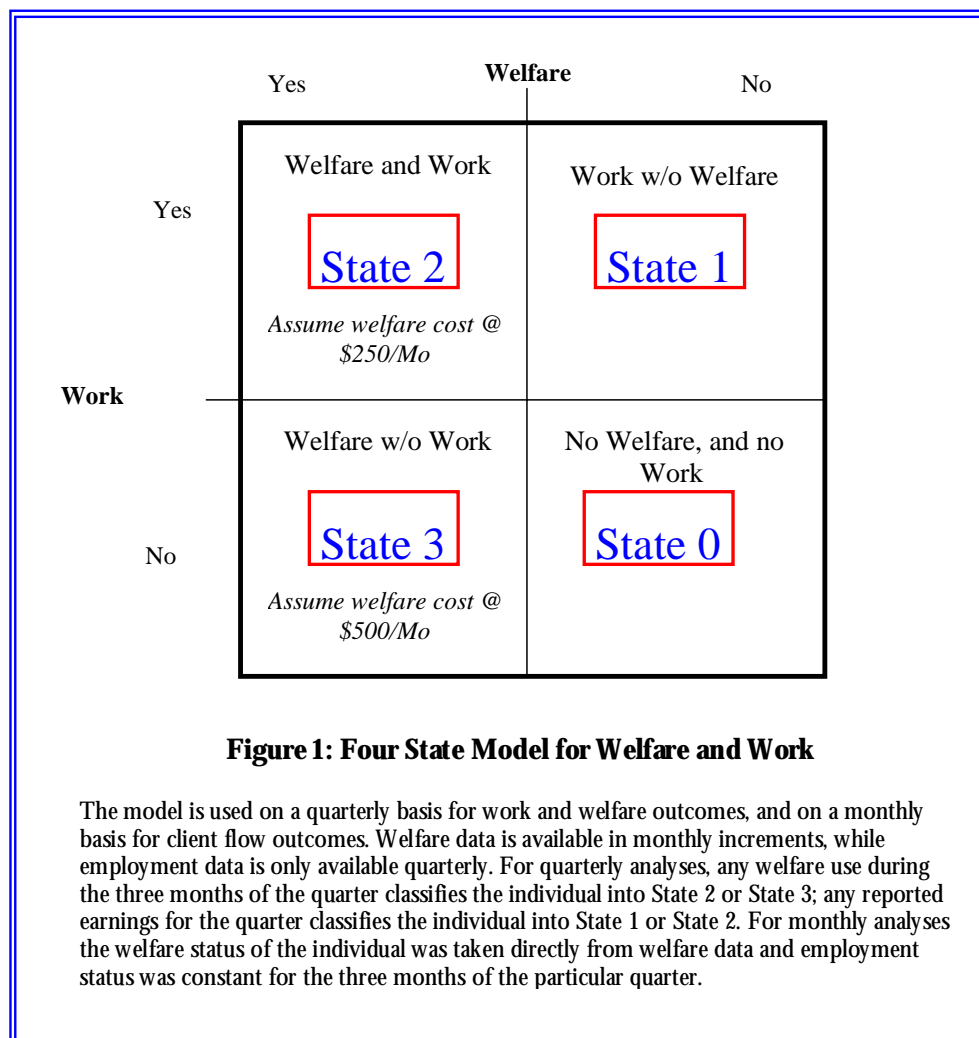
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Introduction

Our focus in this report is child support payments in Washington State and how they relate to subsequent custodial parent welfare use and employment. Rather than amount of payment we use a measure of regularity of payment, expecting that regular payments can provide an element of stability in helping custodial families obtain independence. However, for custodial parents on welfare, child support payments made through the state child support enforcement (CSE) system are retained by the state. Other than a \$50 pass-through in effect from 1984 to July, 1997, the custodial family on welfare receives no direct benefit from non-custodial parent child support payments. After leaving welfare the custodial family can receive the full payment of current support.

In previous work we have established that regular payments of child support for custodial parents (we designate regular payments as “*Regular CSE*” or as “*CR*”) on welfare in the AFDC program were associated with a reduction in subsequent welfare expenses, mainly by extending time off welfare for clients who exit welfare (Formoso, 1999 – note: *Regular CSE* as used in this report was termed *Good CSE* in our previous report). This was based on a four state work and welfare model, shown in Figure 1, and results from logistic analyses and survival analyses for two cohorts (all adults who used welfare in 93Q4 and all adults who used welfare in 95Q4). This fits nicely with the framework of payments described in the



previous paragraph. During their time off welfare regular payments of child support provide an actual stream of income, helping the custodial family to stay off welfare for a longer period of time. We believe that the flow of income is the important factor, since custodial parents with regular payments are not different from those without regular payments while on welfare, arguing against any effect of possible similarity between custodial parent and non-custodial parent.

Work from other states and national studies have also suggested that child support enforcement leads to reduced welfare costs, and reduced costs for other programs such as Medicaid and Food Stamps (Garasky, et. al., 1999; Hu, 1999; Wheaton & Sorensen, 1998; Luttrell, 1994 and 1997; Luttrell & Lee, 1998). A recent extensive review of work in this area is available (Barnow, et. al., 2000).

In this report our previous study is expanded in three ways: 1) the net impact of regular child support payments on welfare use under TANF (cohort of all adults who used welfare in 97Q4) is examined, 2) work net impact outcomes are also examined, under both AFDC and TANF, and 3) a joint analysis of AFDC and TANF periods allows a view of how patterns of work and welfare outcomes and net impacts have changed from late 1993 to early 1999.

To obtain the net impacts of regular child support payments, it is necessary to control for other differences which may also affect outcomes. By a simple mathematical manipulation this approach also allows us to determine the net impact of any controlled factor. Thus our results can also tell us the net impacts of gender, ethnicity, primary language, disability status, age, regional location and economic factors, family size, work history, welfare history, time period, and other state programs. In this paper we report only on the net impacts of child support, of prior entry into the JOBS program under AFDC, of early participation in WorkFirst under TANF, and of the time period.

The results show that under both AFDC and TANF *Regular CSE* is associated with a reduction in subsequent welfare expenses, and with an increased likelihood of work for the custodial parent. The strongest effect appears to be reduced recidivism, with simply a stronger reduction in recidivism for those who are working. But there are also indications that, once they have exited welfare, custodial parents with *Regular CSE* are finding work faster and staying employed longer than comparable custodial parents with *Irregular CSE* (CSE custodial parents who do not meet the criteria for *Regular CSE*). While it is clear that there would be cost benefits issuing from an increased likelihood of work, it is difficult to quantify this. But regular payments of child support do appear to have public benefit in aiding the intent of welfare reform with its emphasis on work.

It has been argued that studies based in the AFDC period are obsolete under welfare reform (Barnow, et. al., 2000). But, regardless of changes in regulations, we are dealing with the same social phenomena. The work presented here covering both time periods shows that by many measures differences between the AFDC and TANF periods are small and understandable. Under TANF the effect of *CR*, leading to reduced welfare expenses, is still mainly reduced recidivism rates. While the effect of *CR* appears to be somewhat stronger under TANF, this is completely explained by a higher portion of the TANF cohort having exited welfare. We show a strong relationship between *CR* cost impact and cohort percentage off welfare that is identical under AFDC and TANF. Our results, broken down

to the most detailed and controlled level, show a good consistency of all CSE impacts across AFDC and TANF time periods. At the most fundamental level, within the intrinsic rates of transitions between the four states of welfare and work shown in Figure 1, there are important changes in some of the rates, but the overall pattern of rates does not change from late 1993 to early 1999.

In the time since implementation of TANF in Washington State there has been a substantial decline in welfare caseloads (OFM Performance Progress Report, 1999), and a dramatic shift in CSE caseload towards non-welfare and former welfare cases (DCS Legislative Report, 1999). Several State studies (Chen, Lerch, and Mayfield, 1999; Ahn, et. al., 2000; Du, et. al., 2000) suggest that former welfare recipients are likely to be employed. However, several national studies have shown indications of potential concern - most notably that the decline in welfare rolls is greater than the decline in child poverty (Porter & Primus, 1999). This coupled with another trend – growing polarization of wealth nationally, in Washington, and in nearly every other state (Bernstein, et. al., 2000) – could be leading towards serious social problems that may have to be addressed by Federal and State governments.

Some of the findings in this report suggest that related trends may be operating in Washington State. In overall comparisons for the effect of time period across the three cohorts, perhaps the most striking findings are an increase in the rate of welfare exit without covered employment and increased recidivism rates for the TANF cohort, relative to AFDC. And while work and welfare outcomes are more favorable under TANF, relative to AFDC, the results presented here suggest that, relative to AFDC, the TANF clients who find work are not necessarily exiting welfare, and the TANF clients who exit welfare are not necessarily finding work. In a period with a very strong state economy, with growing wealth, there may also be a growing group of former welfare families with fragile means of support. This may have implications for the design of public support programs in Washington and emphasizes the importance of successful collections of child support, which may be the only formal means of support for some former welfare families. Sorensen and Zibman (Sorensen and Zibman, 2000) have recently documented the importance of child support income to poor families, and have shown that child support decreases the level of income inequality among children with a parent living elsewhere.

This report is prepared as a technical paper. A short brief presenting the findings is also available (Formoso, 2000). The first section below, *Estimates of Costs*, presents estimates of follow-up welfare costs for custodial parents with *Regular CSE* compared to custodial parents with *Irregular CSE*. This is followed by a detailed presentation of *Program Impacts*, for *Regular CSE*, for prior JOBS entry, and for early participation in WorkFirst. This section also presents a joined cohort analyses and the impact of the cohort selection time period. The final section examines the *Persistence of Regular CSE*, that is, how long custodial parents are expected to remain in the state of *Regular CSE*. Details of data sources, data manipulation, and analyses can be found in the Appendix and in referenced work.

Estimates of Costs

Figure 2 is reproduced from previous work (Formoso, 1999) and shows for the 93Q4 cohort that *Regular CSE* collections are associated with a reduced probability that a custodial parent will be on welfare. By *Regular CSE* we mean that a regular monthly payment is due and that there are less than the equivalent of two lapsed payments. Note that in the previous report what is denoted as 'Good CSE' is identical to *Regular CSE* in this report. The change of notation is regrettable, but *Regular CSE* more clearly indicates our measure of child support collections. See Figure 20 for the precise definitions of *Regular CSE* and *Irregular CSE* (also designated as *CI*). The reduced probability for welfare use leads to a cost avoidance aspect of CSE - *Regular CSE* collections are associated with reduced public expenses for welfare. This effect exists for all three cohorts.

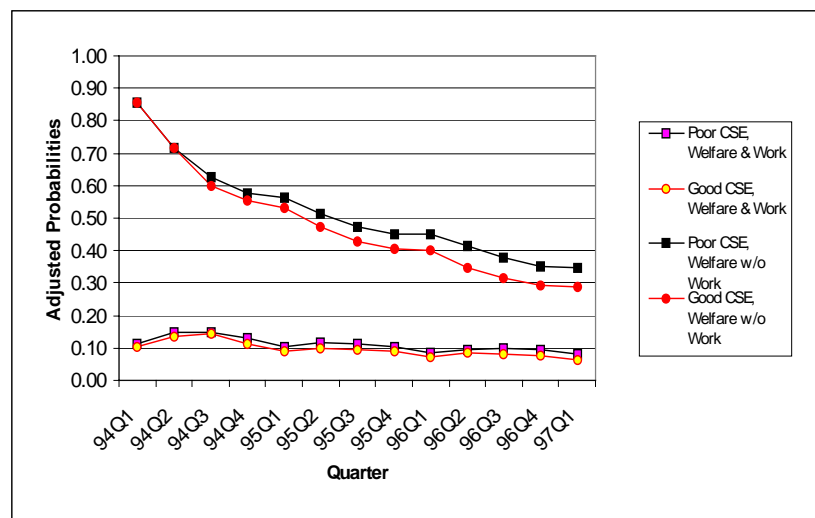


Figure 2: Welfare Net Impact of *Regular CSE* for Average Welfare Clients without JOBS for 93Q4 Cohort (Figure 6 in Formoso, 1999)

State 2 and State 3 outcomes for average welfare clients with no prior JOBS entry (from Formoso, 1999). *Regular CSE* is compared to *Irregular CSE*. Note that in this Figure from the previous report what is denoted as 'Good CSE' is identical to *Regular CSE* in this report. What is denoted in this Figure as 'Poor CSE' is identical to *Irregular CSE*.

Cumulative Cost Estimates

Cost estimates for the 93Q4 and 95Q4 cohorts have previously been reported (Formoso, 1999) and welfare costs for the 97Q4 cohort are estimated in the same way. While average earnings for clients working while on welfare were higher during the 97Q4 follow-up period, income disregard is also higher, so that average payments are about the same for all three cohorts. Table 1 summarizes the cost estimates for all three cohorts, controlled for demographics, regional location, welfare history, and work history. In Table 1 we take the actual number of clients in each *Regular CSE* category and estimate their controlled costs,

and also estimate what those costs would have been for the same number of comparable clients in the equivalent *Irregular CSE* category. The difference then provides us with an estimate of actual cost savings associated with *Regular CSE*.

Table 1: Estimates of Actual Costs and Cost Avoidance Associated with *Regular CSE*

Estimates of actual welfare costs are from logistic model probabilities. Costs are estimates using the assumed costs given in Figure 1 for the actual number of clients with *Regular CSE* compared to what the costs would have been for the same number of clients with *Irregular CSE*. The difference in these two values is then an estimate of cost savings associated with regular CSE payments.

		Welfare Costs; CSE w/o JOBS/WF			
	Number	CI	CR	Diff.	% Diff.
93Q4*	4,261	\$ 48.9M	\$ 45.1M	- \$ 3.8M	-7.80%
95Q4**	3,893	\$ 22.3M	\$ 22.0M	- \$ 0.3M	-1.30%
97Q4**	2,042	\$ 9.2M	\$ 8.9M	- \$ 0.3M	-2.76%
		Welfare Costs; CSE w JOBS/WF			
	Number	CI	CR	Diff.	% Diff.
93Q4*	2,026	\$ 21.2M	\$ 19.5M	- \$ 1.7M	-8.00%
95Q4**	2,426	\$ 10.9M	\$ 10.2M	- \$ 0.7M	-6.40%
97Q4**	2,826	\$ 9.9M	\$ 8.9M	- \$ 1.0M	-10.21%
		Welfare Costs; Totals			
	Number	CI	CR	Diff.	% Diff.
93Q4*	6,287	\$ 70.1M	\$ 64.6M	- \$ 5.5M	-7.85%
95Q4**	6,319	\$ 33.2M	\$ 32.2M	- \$ 1.0M	-3.00%
97Q4**	4,868	\$ 19.0M	\$ 17.8M	- \$ 1.3M	-6.63%

* 13 Q Cum. Costs; ** 5 Q Cum. Costs

5th Follow-Up Quarter Comparisons

The total 97Q4 cohort cost savings during the five quarter follow-up period is somewhat larger than for the 95Q4 cohort, even with substantially fewer clients involved. This, along with larger percentage savings, indicates an even greater influence of *Regular CSE* on each custodial parent's welfare use. This is verified in Table 2 which provides a comparison of cost offsets across the three cohorts, on a per client basis at the fifth follow-up quarter. The total cost offset for 97Q4 is much greater than for either 93Q4 or 95Q4, which are comparable. Since the main effect of regular child support appears to be reducing recidivism,

we would expect child support to have a larger impact with the larger fraction of the 97Q4 cohort exiting welfare.

Table 2: Estimates of Average Five Quarter Cumulative Cost Avoidance Associated with *Regular CSE*

Estimates of welfare cost differences are from logistic model probabilities. Costs are estimated as in Table 1 for 5 follow-up quarters, for an average welfare adult.

5 Q Cumulative CSE Cost Offsets				
	<i>per client</i>			
	w/o	w	Total	% Savings
	JOBS/WF	JOBS/WF		
93Q4	-\$153	-\$129	-\$145	2.7%
95Q4	-\$86	-\$291	-\$165	3.0%
97Q4	-\$124	-\$357	-\$259	6.6%

Growth of CSE Cost Offset

The main effect of *Regular CSE* occurs after welfare exit. We could thus expect a delay in cost returns attributable to child support. For the 93Q4 cohort almost half of the total 13 quarter cost savings accrued in the last four quarters of follow-up (Formoso, 1999). In addition, we could expect that the cost savings attributable to *Regular CSE* would increase as more custodial parents leave welfare. Figure 3 shows a strong, nearly linear, relationship between the percentage welfare savings and the percentage of the cohort off welfare. This relationship tells us that after 20% of the cohort has left welfare, each additional 1% off welfare yields about ½% cost savings attributable to *Regular CSE*. The results for the three cohorts are identical within statistical limits, indicating no change from late 1993 to early 1999; welfare reform does not seem to have affected this aspect of child support collections.

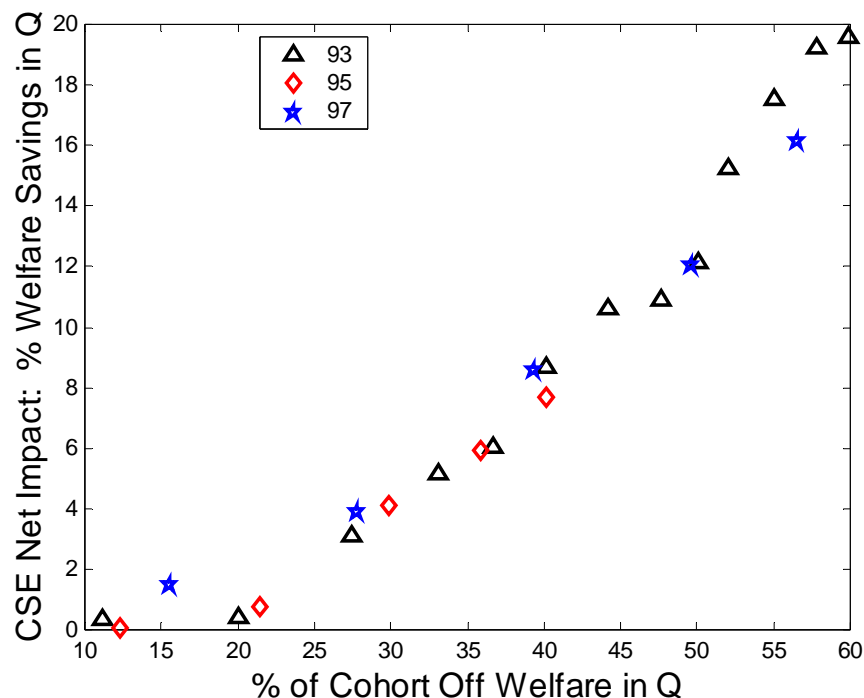


Figure 3: Growth of CSE Cost Avoidance Impact as More Clients Leave Welfare

The net impact cost savings attributable to *Regular CSE* in each follow-up quarter is related to the percentage of each cohort off welfare in that follow-up quarter. Percent welfare savings were calculated as in Tables 1 and 2. After the first follow-up quarter (the first three points on the graph) there is a strong linear relationship with an adjusted R^2 value of 0.96: $\% \text{Savings} = 0.48 * (\% \text{Off} - 20\%)$.

CSE Interaction with Other State Services

The much larger 97Q4 CSE cost offset for clients who have participation in WorkFirst (see Table 1) suggests a beneficial interaction, as was previously reported for the 95Q4 cohort between *Regular CSE* and prior JOBS entry. This is indeed a possibility, as shown in Figure 4, which gives a comparison for all three cohorts. There appears to be about a 20% bonus in cost savings for clients who had both *Regular CSE* and early WorkFirst participation, compared to the cost savings of the separate programs. An approximate 20% bonus interaction between *Regular CSE* and JOBS for 95Q4 was previously reported (Formoso, 1999).

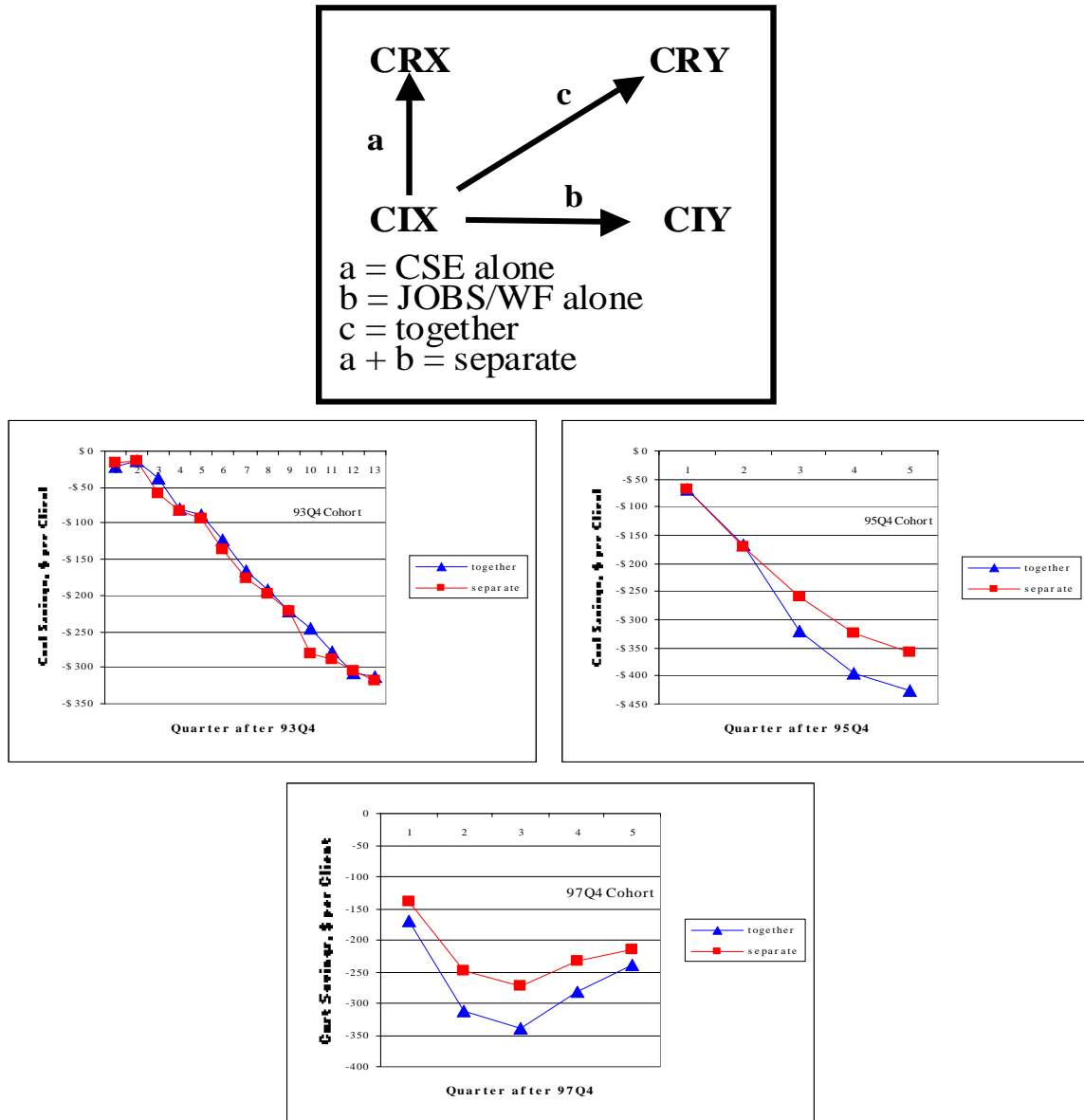


Figure 4: Interaction Between CSE and JOBS or WorkFirst

Shown are quarterly, not cumulative, estimated average controlled welfare cost differences. *CIX* refers to *Irregular CSE* with no prior JOBS entry or without early WorkFirst participation. *CIY* refers to *Irregular CSE* with prior JOBS entry or with early WorkFirst participation. *CRX* refers to *Regular CSE* with no prior JOBS entry or without early WorkFirst participation. *CRY* refers to *Regular CSE* with prior JOBS entry or with early WorkFirst participation. a = cost for *CRX* minus the cost for *CIX*, b = cost for *CIY* minus the cost for *CIX*, c = cost for *CRY* minus the cost for *CIX*.

Program and Period Impacts

While the cost savings results presented in the previous section do give us a sense of program impact, only States 2 and 3 (see Figure 1) are involved in the cost estimates. The CSE effect is associated not only with a decreased probability for both States 2 and 3, but also with changes in probability for States 0 and 1. In this section we report results as percentage difference in work and welfare probabilities associated with the program. With results controlled for all other factors, this will give us an estimate of the net impact on an average welfare adult of *Regular CSE* relative to *Irregular CSE*, and we can also estimate the net impacts of other factors included in the model. Percentage difference more clearly represents the effect associated with the particular factor. For example, the effect of CSE on the state 'Welfare & Work' in Figure 2 appears to be much smaller than the effect on 'Welfare w/o Work,' but in terms of percentage difference they are of comparable magnitude. Using percentage difference will however tend to amplify uncertainties in results. This leads in some cases to the rather jagged appearance of the lines in the charts presented below (Figures 5 through 15).

Throughout the Program Impacts section we only report the impact of CSE for those who had not previously entered JOBS or WorkFirst. And since we are also interested in the impacts of other programs accessed by clients, we report the impacts of prior JOBS or early WorkFirst entry for clients with *Irregular CSE*. These results estimate the effect associated with each program without the presence of the other. Joint program impacts are more complex, but may be addressed in future work (see subsection below on *Use of Other State Services*).

This section has six sub-sections, beginning with a discussion of work and welfare outcomes for the three cohorts analyzed separately. Then the results of analyses for all three cohorts grouped together, with control for economic factors across time – in addition to other factors– are discussed. Next client flow studies are discussed, first from separate single cohort analyses, and then from the joined cohort analyses. In the fifth sub-section all these results are considered together. Some readers may wish to go directly to page 37 for this summary. The final sub-section discusses some preliminary results with new information on cross program usage.

Single Cohort Analyses: Work and Welfare Outcomes

In this section we report results for three separate analyses, one for each cohort. This is derived from the same set of analyses which are reported in the Estimates of Costs section.

Overall Outcomes

We begin by noting that the probability of being on welfare in any follow up quarter is the sum of the probability of being in State 2 and the probability of being in State 3 (see Figure 1). The probability of working in any quarter is the sum of the probability of being in State 1 and the probability of being in State 2. We calculate these probabilities from the results of logistic regression and determine the percentage difference between *Regular CSE* and

Irregular CSE (without JOBS/WF) and the percentage difference between prior JOBS/WF entry and no prior JOBS/WF entry (with *Irregular CSE*).

In any quarter:

$$P_{welfare} = P_{S2} + P_{S3}$$

$$P_{work} = P_{S1} + P_{S2}$$

$$\% Dif_{welfare, CSE} = 100 \frac{P_{welfare, CR} - P_{welfare, CI}}{P_{welfare, CI}}$$

$$\% Dif_{work, CSE} = 100 \frac{P_{work, CR} - P_{work, CI}}{P_{work, CI}}$$

In the 1993 cohort those with regular child support payments were increasingly less likely to be on welfare (Figure 5a) and more likely to be working (Figure 5c) during the follow up period. Those who entered JOBS prior to 93Q4 were also less likely to use welfare (Figure 5b) and more likely to be working (Figure 5d). All of these effects show strong trends through most of the 13 quarter follow-up period.

The same general effects were associated with the programs in the 1995 cohort (Figure 6) and the 1997 cohort (Figure 7), though there are some differences in detail. Note that in Figures 5, 6, and 7 the JOBS/WorkFirst effects on welfare outcomes are somewhat larger and work outcomes are much larger than the CSE effects. This is particularly apparent in the 95Q4 cohort where the probability of working for those who had entered JOBS is increased by about 80% through most of the five quarters following 95Q4. The WorkFirst comparison in the 1997 cohort may not be very meaningful, because most of the individuals who had not began participation in WorkFirst would be required to participate during the follow up period. This is probably why the work outcome effect is tending towards zero.

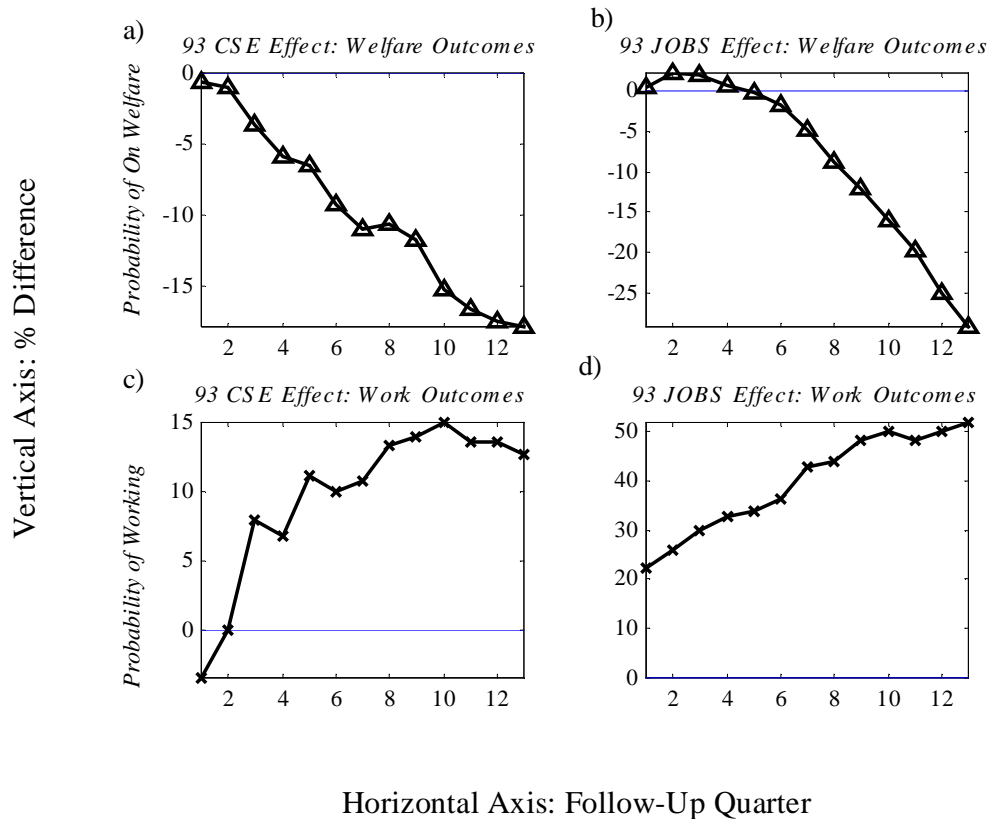


Figure 5: Net Program Impacts on Overall Work and Welfare Outcomes for 93Q4 Cohort

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry; and b) and d) compare prior JOBS entry with no prior JOBS entry for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare, regardless of work status while c) and d) show the percentage difference in the probability of working, regardless of welfare status. Probabilities for each of the four states (Figure 1) are obtained from logistic modeling. The probability of being on welfare is the sum of the probabilities of State 2 and State 3. The probability of working is the sum of the probabilities of State 1 and State 2. CSE % difference is the probability for Regular CSE minus that for Irregular CSE, divided by the probability for Irregular CSE. JOBS % difference is found in the same way.

For an example in reading Figure 5, in the 10th follow-up quarter clients with Regular CSE are about 15% less likely to be on welfare (Fig 5a) and about 15% more likely to be working (Fig 5c) than comparable clients with Irregular CSE.

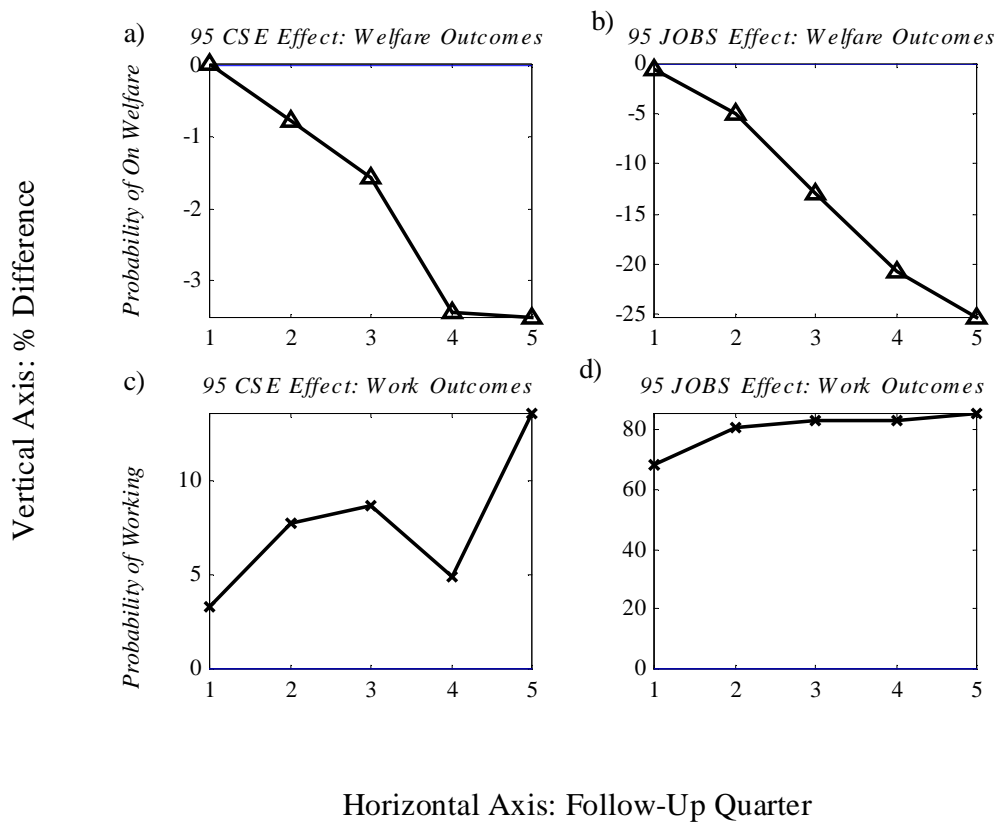


Figure 6: Net Program Impacts on Overall Work and Welfare Outcomes for 95Q4 Cohort

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry, and b) and d) compare prior JOBS entry with no prior JOBS entry for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare, regardless of work status while c) and d) show the percentage difference in the probability of working, regardless of welfare status.

Reading Figure 6 is similar to reading Figure 5; see Figure 5 for an example.

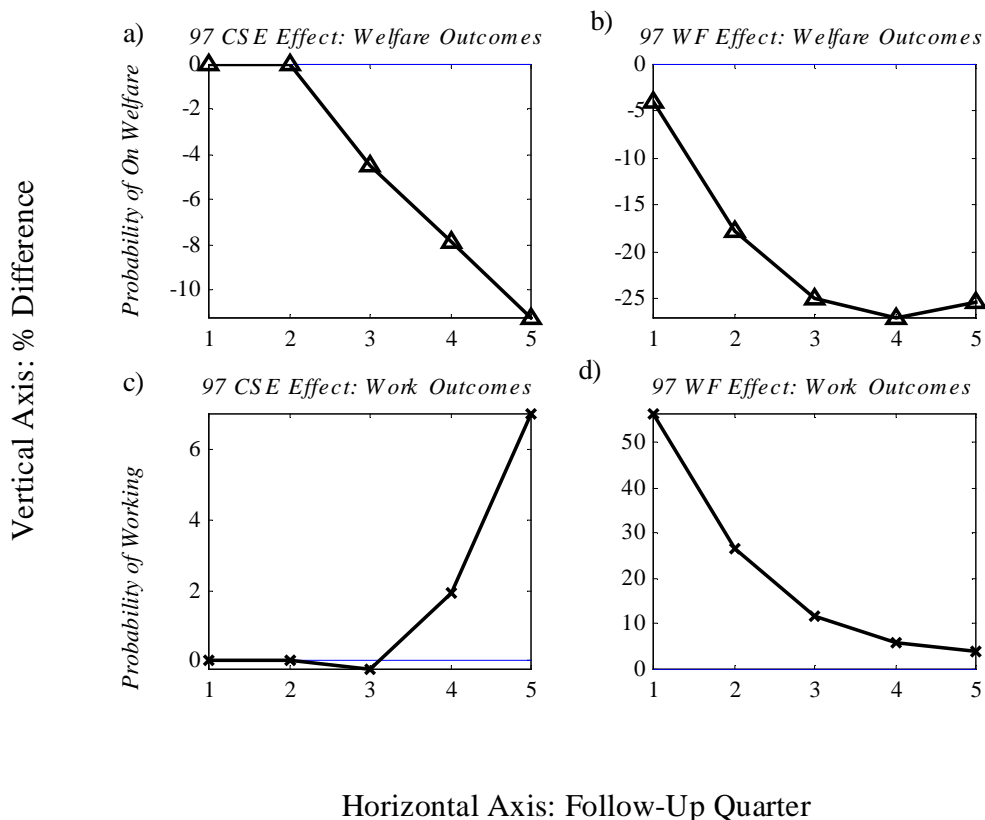


Figure 7: Net Program Impacts on Overall Work and Welfare Outcomes for 97Q4 Cohort

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients without early WorkFirst participation, and b) and d) compare early WorkFirst participation with late WorkFirst participation for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare, regardless of work status while c) and d) show the percentage difference in the probability of working, regardless of welfare status.

Reading Figure 7 is similar to reading Figure 5; see Figure 5 for an example.

Detailed Outcomes

The results shown in Figures 5-7 can be further broken down. The probability of being on welfare is decomposed into a separate probability for those who are working and for those who are not working. The probability of work is decomposed into a separate probability for those who are on welfare and for those who are not on welfare. This additional breakdown shows large differences hidden in the overall effects.

The probability of being on welfare for those working is the probability of being in State 2 divided by the probability of work (see above, the probability of work is the sum of the probability of being in State 1 and the probability of being in State 2). The probability of being on welfare for those not working is the probability of State 3 divided by the probability of not working. The probability of working for those on welfare is the probability of State 2 divided by the probability of being on welfare. The probability of working for those not on welfare is the probability of State 1 divided by the probability of not being on welfare. In any quarter:

$$P_{< \text{welfare} \mid \text{working}} = \frac{P_{S2}}{P_{\text{work}}}$$

$$P_{< \text{welfare} \mid \text{not working}} = \frac{P_{S3}}{P_{S0} + P_{S3}}$$

$$P_{< \text{working} \mid \text{on welfare}} = \frac{P_{S2}}{P_{\text{welfare}}}$$

$$P_{< \text{working} \mid \text{off welfare}} = \frac{P_{S1}}{P_{S0} + P_{S1}}$$

Comparing panels (a) and (c) of Figures 8, 9, and 10 shows a consistency in the CSE impacts on work and welfare outcomes across the three cohorts, though details differ. For each cohort the effect of reducing the probability of welfare use is stronger for those who are working. In the 1995 cohort there even appears to be a slight increase in probability of welfare use for those not working (Figure 9a). The CSE effect increasing the overall probability of working is entirely due to those off welfare for all three cohorts; for those on welfare the CSE effect is mostly a small decrease in the probability of working (Figures 8c, 9c, and 10c).

While the overall effect associated with JOBS is a decreased probability of welfare use, the JOBS effect on welfare outcomes for those who are working is actually an increase in probability of welfare use through most of the follow-up period for the 1993 cohort (Figure 8b), as it is for part of the follow-up period in 1995 (Figure 9b). With the reservations about the WorkFirst comparison stated above, the WorkFirst result (Figure 10b) is consistent with the JOBS results in that the effect in reducing welfare use is larger for those who are not working. This is the opposite of the CSE effect on welfare outcomes, which are larger for those who are working.

The JOBS and WorkFirst impacts on work outcomes are larger for those on welfare, again opposite to the CSE impacts. There is a strong effect for the 95Q4 cohort (Figure 9d) where there is over 100% increase in the probability of working, for those on welfare – those who were on welfare and had entered JOBS were more than twice as likely to be working. The WorkFirst effects (Figure 10d) may be tending towards zero as the comparison groups become more similar.

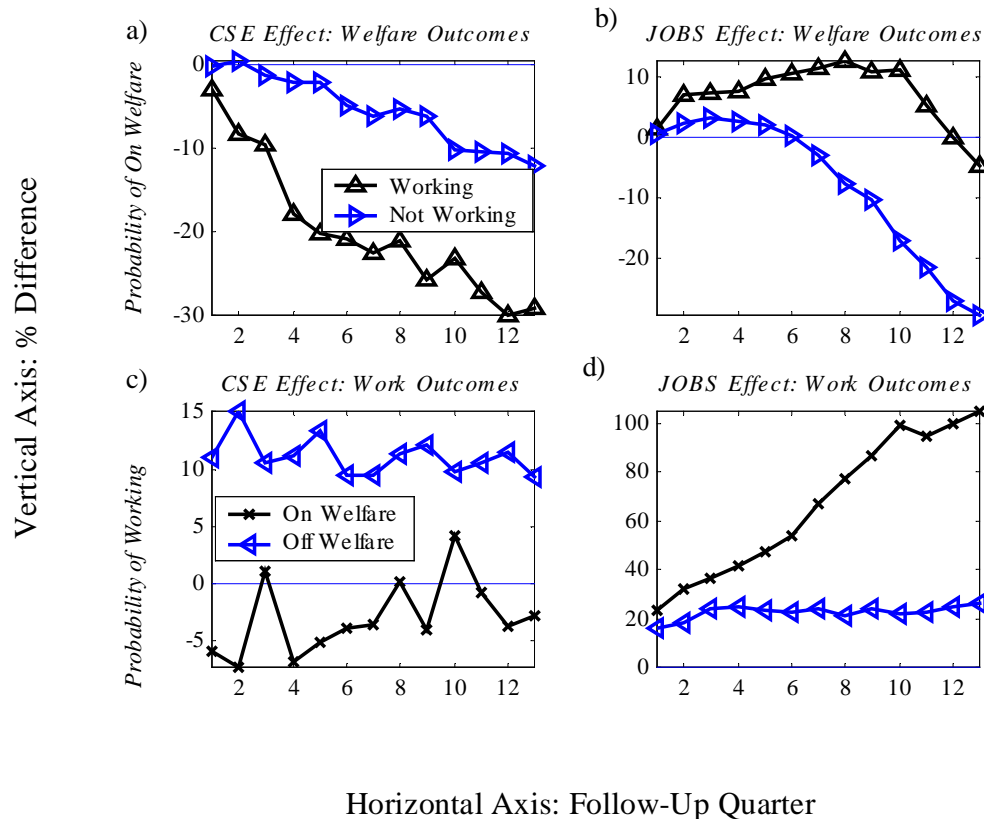


Figure 8: Net Program Impacts for 93Q4 Cohort: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry, and b) and d) compare prior JOBS entry with no prior JOBS entry for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare by work status while c) and d) show the percentage difference in the probability of working by welfare status. The probability of on welfare for those working is the probability of State 2 divided by the sum of the probabilities of State 1 and State 2. Similar calculations give the other probabilities. See text. See Figure 1 for state labels and Figure 5 legend for additional details.

For an example in reading Figure 8, in the 13th follow-up quarter clients with *Regular CSE* are about 12% less likely to be on welfare if they are not working and about 30% less likely to be on welfare if they are working (Fig 8a) than comparable clients with *Irregular CSE*.

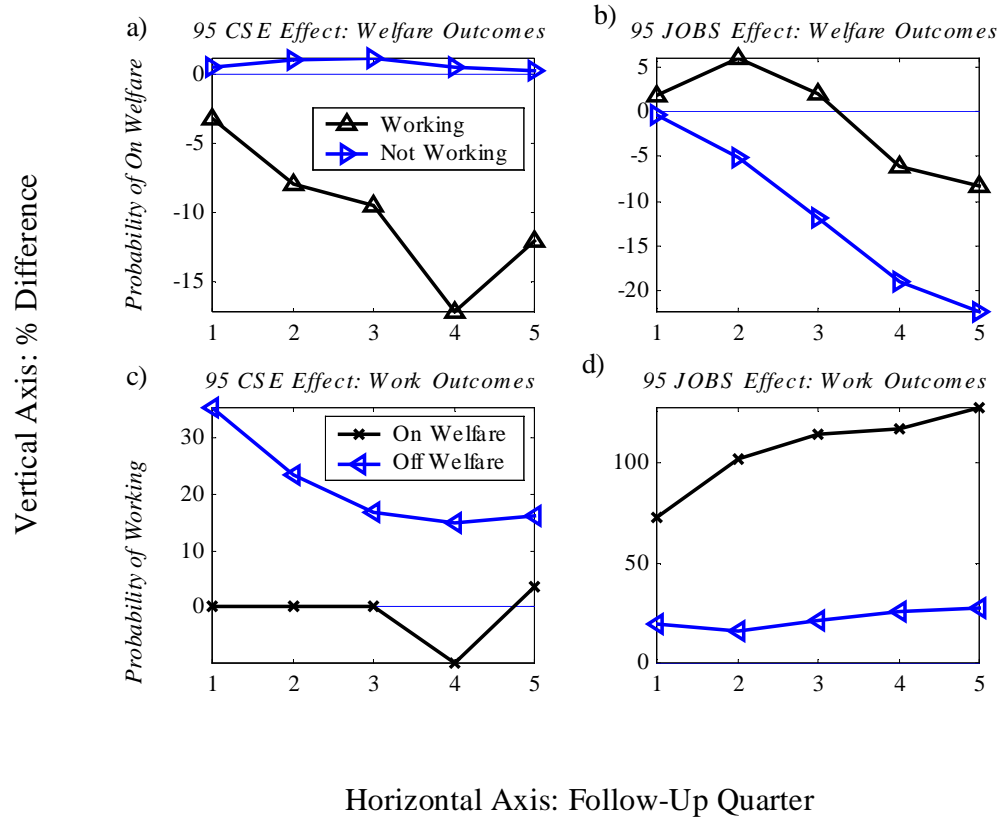


Figure 9: Net Program Impacts for 95Q4 Cohort: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry, and b) and d) compare prior JOBS entry with no prior JOBS entry for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare by work status while c) and d) show the percentage difference in the probability of working by welfare status.

Reading Figure 9 is similar to reading Figure 8; see Figure 8 for an example.

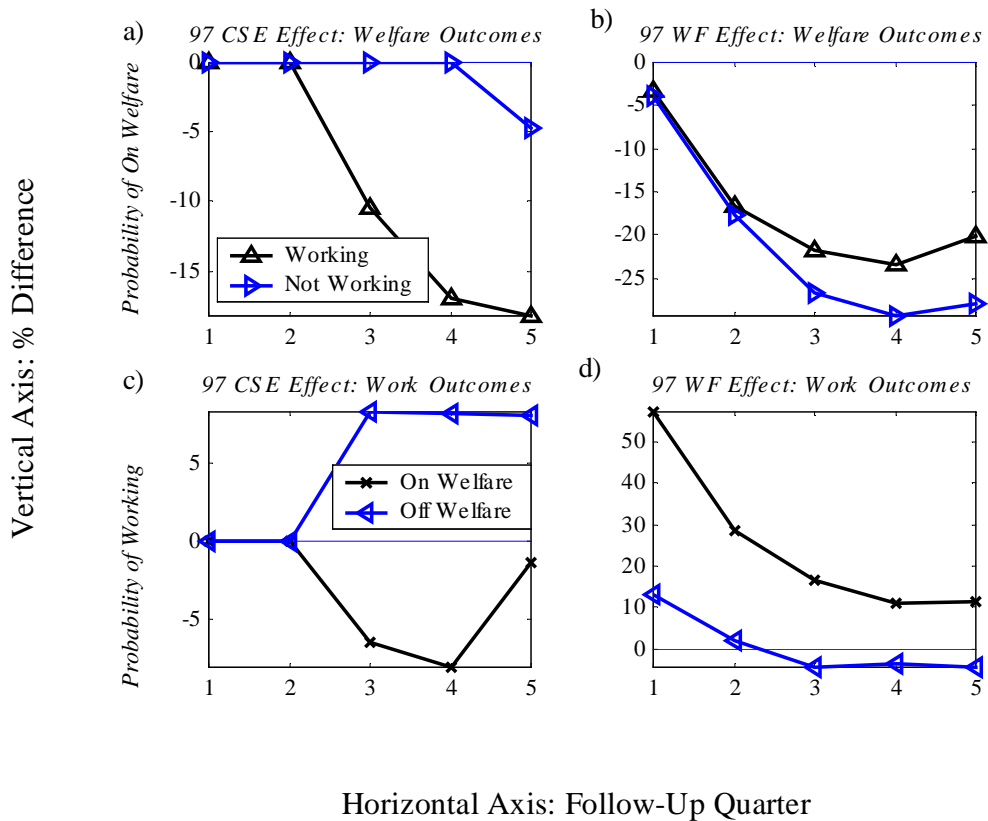


Figure 10: Net Program Impacts for 97Q4 Cohort: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status

a) and c) compare *Regular CSE* with *Irregular CSE* for all clients without early WorkFirst participation, and b) and d) compare early WorkFirst participation with late WorkFirst participation for all clients with *Irregular CSE*. a) and b) show the percentage difference in the probability of being on welfare by work status while c) and d) show the percentage difference in the probability of working by welfare status.

Reading Figure 10 is similar to reading Figure 8; see Figure 8 for an example.

Joined Cohort Analyses: Work and Welfare Outcomes

In this section we report the results with all three cohorts combined into one analysis. Only five follow-up quarters are included for the 1993 cohort and follow-up quarters are counted from the selection quarter for each cohort. We control for changes in economic conditions by replacing the regional location variable with regional unemployment rates for the cohort selection year.

Overall Outcomes by Year

To first have an overall view of how 1993, 1995, and 1997 compare, the program variables

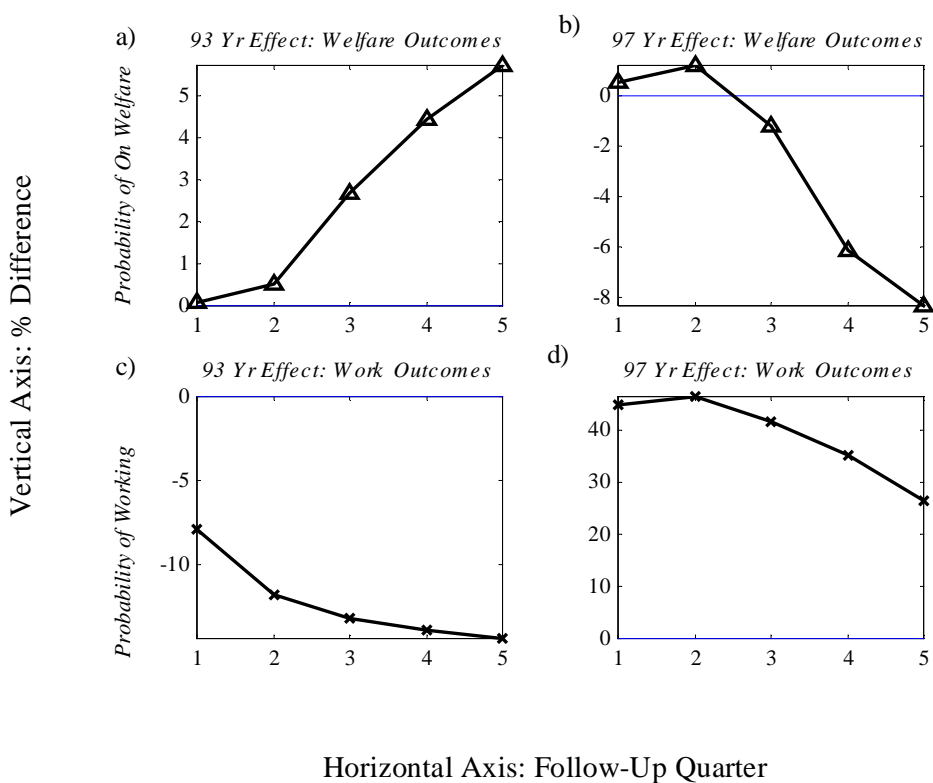


Figure 11: Net Impacts of Cohort Selection Year on Overall Work and Welfare Outcomes (Joined Cohort Analysis)

a) and c) compare 93Q4 cohort with 95Q4 cohort for all clients, and b) and d) compare 97Q4 cohort with 95Q4 for all clients. a) and b) show the percentage difference in the probability of being on welfare, regardless of work status while c) and d) show the percentage difference in the probability of working, regardless of welfare status.

For an example in reading Figure 11, in the 5th follow-up quarter clients from the 97Q4 cohort were about 8% less likely to be on welfare (Fig 11b) than comparable clients from the 95Q4 cohort. See Figure 5 legend for additional details.

are removed from the analysis and indicator variables for year, with 1995 as reference, are used. This gives us results controlled for demographics, welfare history, work history, and regional economic conditions over time. Relative to the 1995 cohort the 1993 cohort (Figure 11a) showed an increase in welfare use while the 1997 cohort (Figure 11b) showed a decrease. Also the trend in 1993 is increasingly positive while the trend in 1997 is increasingly negative. The comparison on work outcomes shows a decrease in probability of work in 1993 (Figure 11c) and a strong increase in probability of work in 1997 (Figure 11d), again relative to 1995.

Detailed Outcomes by Year

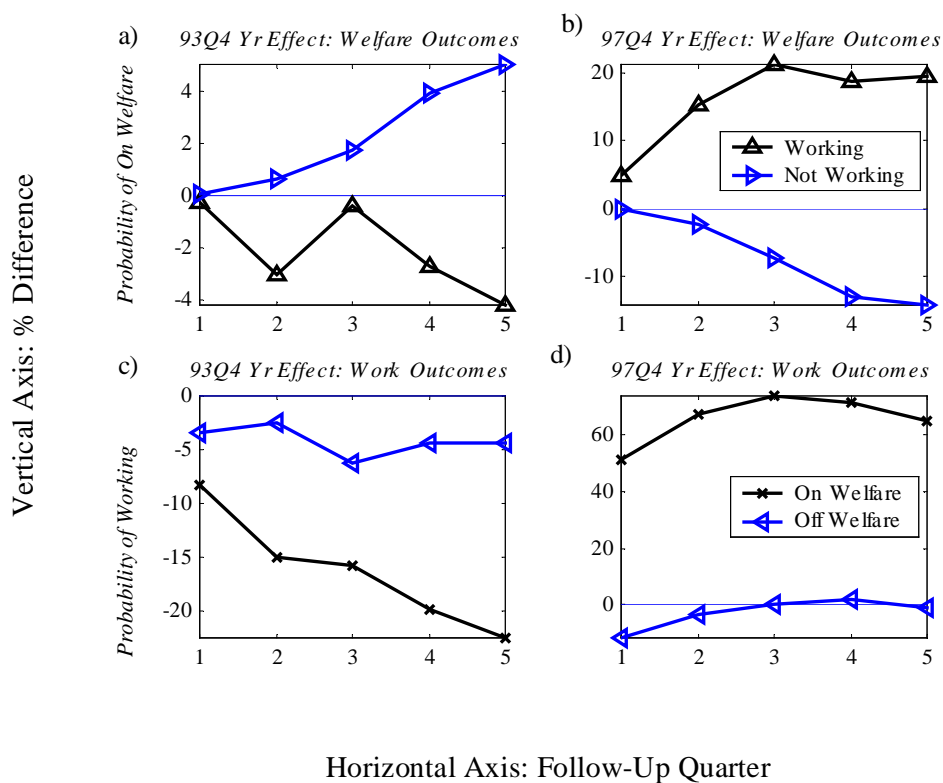


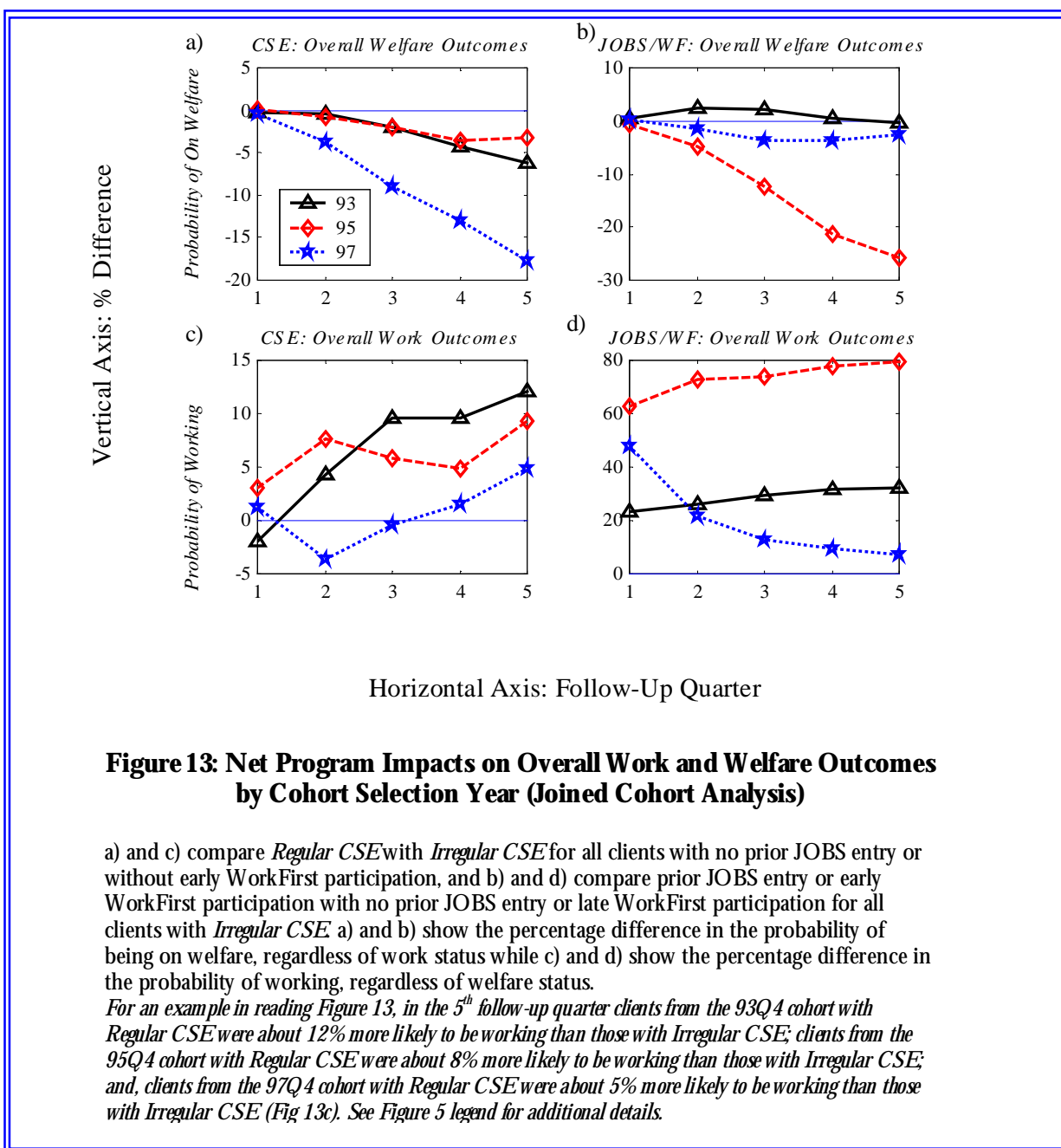
Figure 12: Net Impacts of Cohort Selection Year: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status (Joined Cohort Analysis)

a) and c) compare 93Q4 cohort with 95Q4 cohort for all clients, and b) and d) compare 97Q4 cohort with 95Q4 for all clients. a) and b) show the percentage difference in the probability of being on welfare by work status while c) and d) show the percentage difference in the probability of working by welfare status.

For an example in reading Figure 12, in the 5th follow-up quarter clients from the 97Q4 cohort were about 20% more likely to be on welfare if working, and about 12% less likely to be on welfare if not working (Figure 12b) than comparable clients from the 95Q4 cohort. See Figure 8 legend for additional details.

We decompose these results in Figure 12. We see that while the overall effect for 1993 relative to 1995 is an increase in welfare use, there actually appears to be a decrease in welfare use for those working (Figure 12a). While the overall effect for 1997 relative to 1995 is a decrease in welfare use, there appears to be an increase in welfare use for those working (Figure 12b). The 1993 effect decreasing work outcomes is stronger for those on welfare (Figure 12c). The 1997 effect increasing work outcomes appears to be entirely due to those on welfare, the effect on those off welfare is near zero (Figure 12d).

Overall Outcomes by Year and Program



Next we combine the program indicators with the year indicators, which allows us to make a controlled comparison of program impacts across the three cohorts. The combination *Irregular CSE* without JOBS in the 95Q4 cohort is used as reference. The overall results are shown in Figure 13.

The CSE impact on decreasing the probability of being on welfare is similar in 1993 and 1995, but appears to be much stronger in 1997 (Figure 13a). The CSE impact on probability of work appears to be trending positive in all three cohorts (Figure 13c).

In comparing JOBS impact with WorkFirst impact we must be cautious because the WorkFirst impact is mostly comparing those who started WorkFirst in the last two quarters of 1997 with those who started WorkFirst in the first two quarters of 1998. But the JOBS impact on welfare outcomes in 1993 appears to be very different from the impact in 1995 (Figure 13b). But Figure 5b suggests that 1993 welfare outcomes may just be delayed in time – a sharp drop in welfare probability occurs after the 6th follow-up quarter. While the JOBS impacts on work outcomes are both positive for 1993 and 1995, the impact is about three times as strong in 1995 (Figure 13d).

Detailed Outcomes by Year and Program

The joined cohort CSE effects are further broken down in Figure 14. The CSE impact on welfare outcomes for those working is quite similar across the three cohorts, showing a strong decreasing trend in welfare probability (Figure 14a). The CSE impact on welfare outcomes for those not working is near zero in the 1993 and 1995 cohorts, but shows a decreasing trend for the 1997 cohort (Figure 14b). The CSE impacts on work outcomes for those on welfare appear to be a decrease, but small (Figure 14c). The CSE impacts on work outcomes for those off welfare are an increase and very similar, with the exception of quarter 2 for 1997 (Figure 14d).

Figure 15 decomposes the joined cohort JOBS/WorkFirst effects in the same way. In both the 1993 and 1995 cohorts the JOBS impact on welfare outcomes for those working begins as an increase but by the fourth follow-up quarter the impact in 1995 is a decrease in welfare use (Figure 15a). Figure 8b suggests that the impact in 1993 becomes a decrease in about the 12th follow-quarter. The JOBS impact on welfare use for those without work is a strong decrease in 1995, but an increase in 1993 (Figure 15b, see also Figure 8b). The JOBS impact on work outcomes for those on welfare is an increase in both 1993 and 1995, but much stronger in 1995 (Figure 15c). The JOBS impact on work outcomes for those off welfare is an increase and of similar magnitude in 1993 and 1995 (Figure 15d). The impact of early WorkFirst entry appears to be a decrease in welfare use for both those working and those without work (Figures 14a and 14b) and an increase in work regardless of welfare status (Figures 14c and 14d).

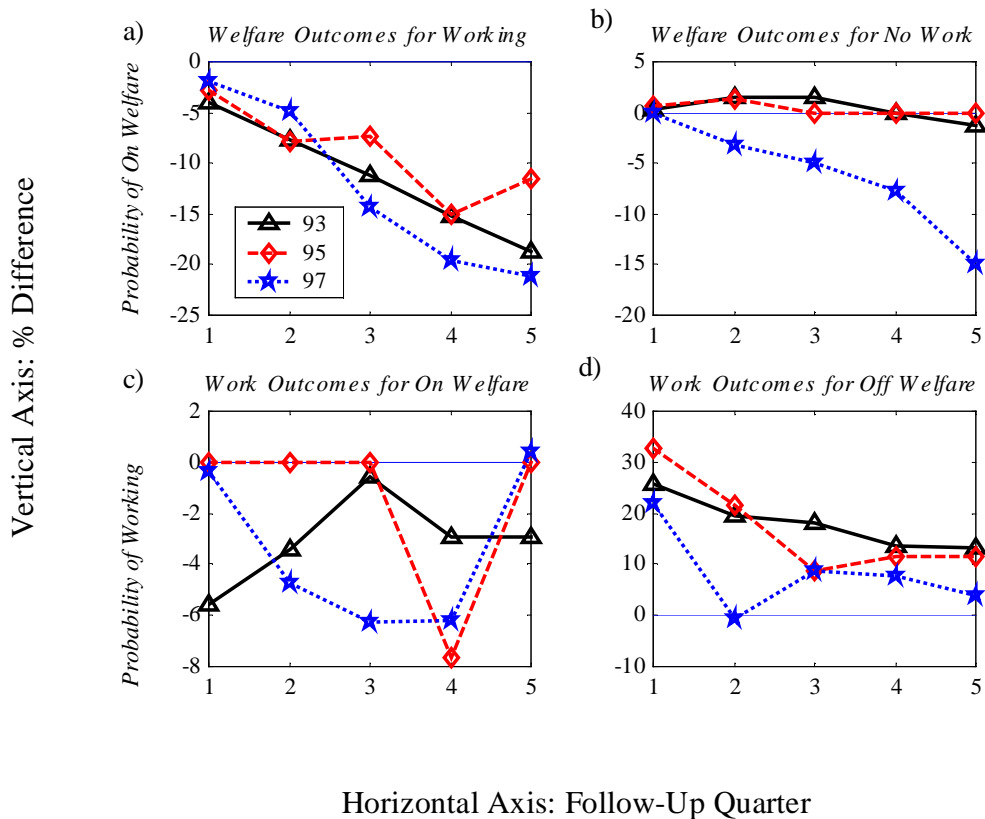


Figure 14: Net CSE Impacts for Joined Cohort Analysis: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status

Comparing *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry or without early WorkFirst participation. a) shows the percentage difference in the probability of being on welfare for those who are working, and b) shows the percentage difference in the probability of being on welfare for those who are not working. c) shows the percentage difference in the probability of working for those on welfare, and d) shows the percentage difference in the probability of working for those not on welfare.

For an example in reading Figure 14, in the 5th follow-up quarter working clients from the 93Q4 cohort with *Regular CSE* were about 18% less likely to be on welfare than those with *Irregular CSE*; working clients from the 95Q4 cohort with *Regular CSE* were about 13% less likely to be on welfare than those with *Irregular CSE*; and, working clients from the 97Q4 cohort with *Regular CSE* were about 22% less likely to be on welfare than those with *Irregular CSE* (Fig 14a). See Figure 8 legend for additional details.

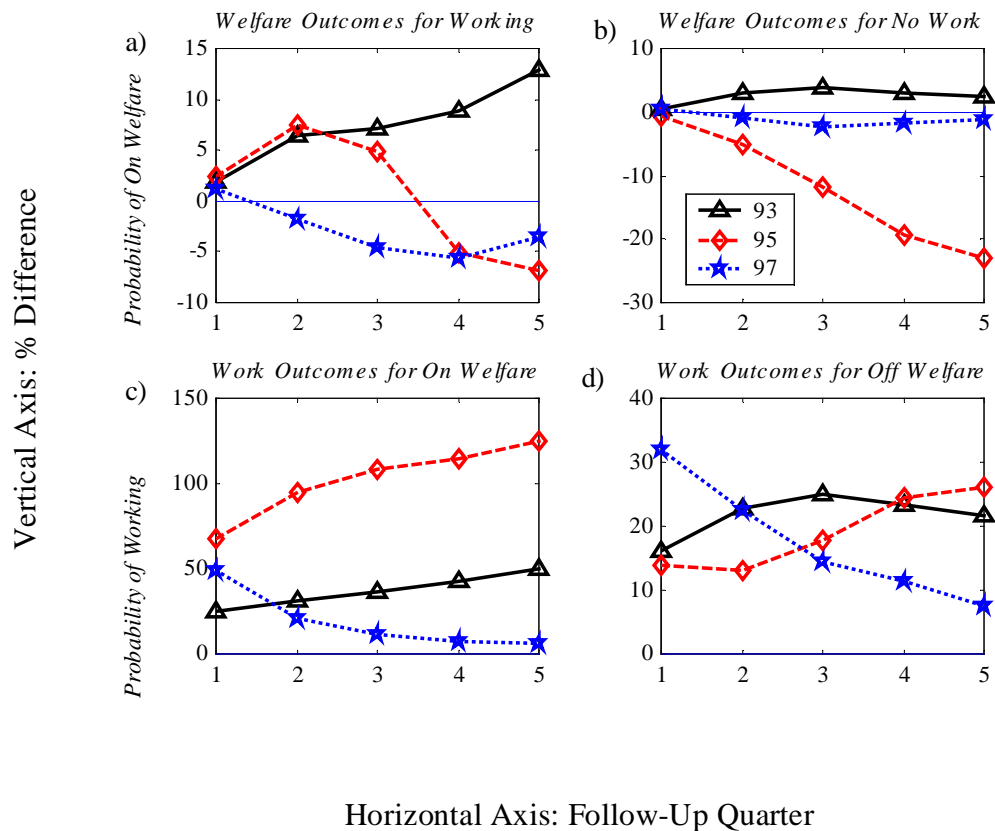


Figure 15: Net JOBS or WorkFirst Impacts for Joined Cohort Analysis: Work Outcomes by Welfare Status, and Welfare Outcomes by Work Status

Comparing prior JOBS entry or early WorkFirst participation with no prior JOBS entry or without early WorkFirst participation for all clients with *Irregular CSE*. a) shows the percentage difference in the probability of being on welfare for those who are working, and b) shows the percentage difference in the probability of being on welfare for those who are not working. c) shows the percentage difference in the probability of working for those on welfare, and d) shows the percentage difference in the probability of working for those not on welfare.

Reading Figure 15 is similar to reading Figure 14; see Figure 14 example.

Single Cohort Analyses: Client Flow Outcomes

As in previous work (Formoso, 1999) characteristics of client flow between work and welfare states are studied by survival analysis techniques. These techniques allow us to isolate controlled rates of movement for all the possible changes in our four state work and welfare model. However, for technical reasons, results for changes where both work status and welfare status change are not reliable (Formoso, 1999 and 1999a) and are generally not included in this discussion. The rates for these changes are always very much slower than competing rates and will usually not be very important (see Table 3).

Figure 16 gives the results for the three separate analyses, one for each cohort, where the values presented are the impacts (as percentage difference) on the mean expected residence time in the state for the indicated event. Again this represents the controlled effects on an average welfare client. For simplicity in the discussion we use the state labels given in Figure 1.

In the 1993 cohort the only impact of *Regular CSE* relative to *Irregular CSE* is increased time off welfare. The time in State 1 is increased by about 43% (for return to State 2); for State 0 the time off welfare is increased by about 30% (for return to State 3). This is in agreement with Figure 8a where the reduction in welfare probability is shown to be significantly larger for those who are working.

For the 1995 and 1997 cohorts the main effects show a corresponding increase in time off welfare associated with *Regular CSE* relative to *Irregular CSE*, and for all three cohorts the impact is larger for those who are working. But the 1995 cohort also shows *Regular CSE* associated with about a 16% reduction in the time in State 0 (for exit to State 1) and about a 19% increase in the time in State 1 (for exit to State 0). The 16% value is marginally significant, but the two values taken together indicate a preferential flow from State 0 towards State 1 associated with *Regular CSE*. In the 1997 cohort there appears to be a marginally significant 17% reduction in the time in State 2 (for exit to State 1). This coupled with the 56% increase in expected time in State 1 (for exit to State 2) again indicates a preferential flow towards State 1. These results are consistent with Figure 9a for the 1995 cohort and Figure 10a for the 1997 cohort.

It is Figure 16 which provides the evidence for similarity between *Regular CSE* and *Irregular CSE* while on welfare. Essentially all the differences appear after welfare exit.

The effects associated with the JOBS program in 1993 moved clients towards work, with by far the largest effect about a 40% reduction in the time in State 3 (for movement to State 2). For those off welfare JOBS entry appears to be associated with about a 23% increase in the time employed and a (marginally significant) 13% reduction in the time not employed.

The picture associated with JOBS is much more complicated for the 1995 cohort, where the entire flow pattern appears to be affected. First for those working there appears to be increased churning between on and off welfare (States 1 and 2); the expected time in each state is reduced indicating that clients are moving back and forth more rapidly (the -7.2% shown is not statistically significant). The effect on movement towards work appears to be similar to that in the 1993 cohort, with again a stronger effect for those on welfare. There is

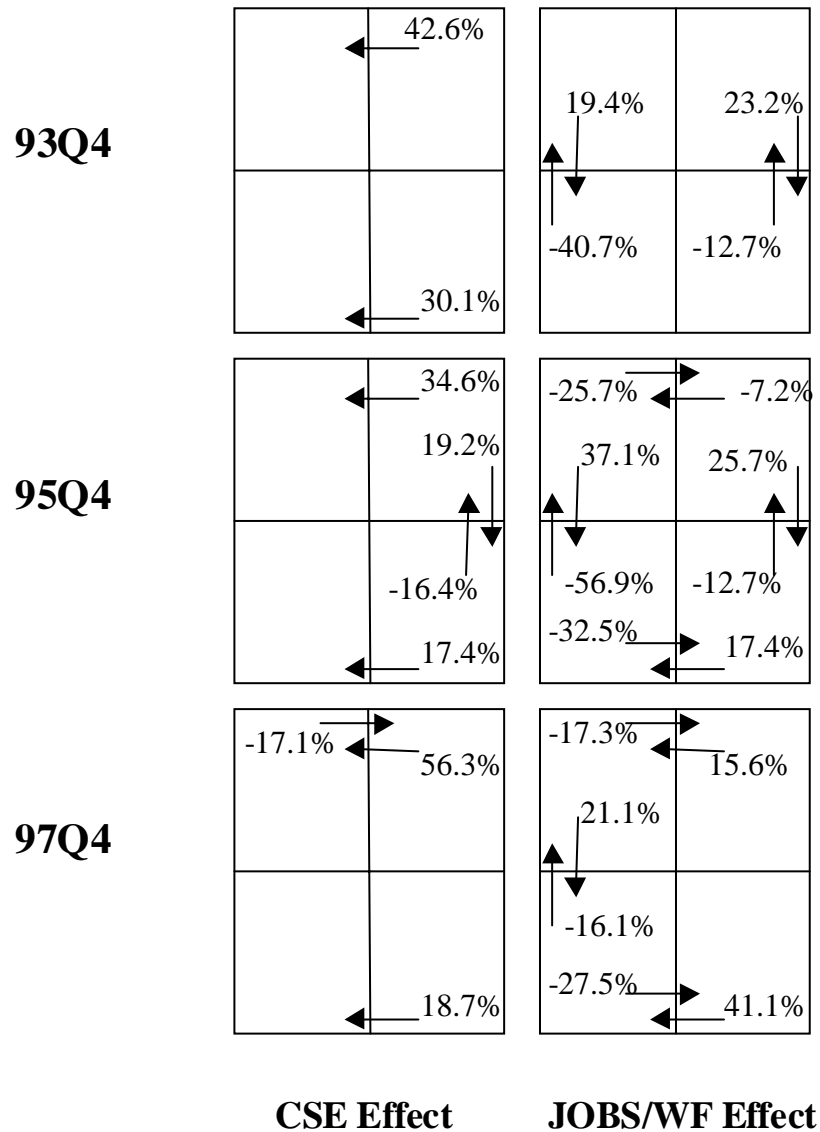


Figure 16: Net Program Impacts on Client Flow Outcomes

The left column compares *Regular CSE* with *Irregular CSE* for all clients with no prior JOBS entry or without early WorkFirst participation, and the right column compares prior JOBS entry or early WorkFirst participation with no prior JOBS entry or late WorkFirst participation for all clients with *Irregular CSE*. The values shown are percent difference in expected mean spell length for the indicated event. See Figure 1 for the definition of states and state labels. See Figure 17 for a simplified version of client flow outcomes.

For an example in reading Figure 16, in the State 1 to State 2 transition for the 93Q4 cohort, clients with Regular CSE are expected to stay in State 1 42.6% longer, on average, than clients with Irregular CSE.

about a 57% reduction in the time in State 3 (for movement to State 2). In addition, with the 1995 cohort there is associated with JOBS a preferential movement from State 3 to State 0; there is about a 32% reduction in expected time in State 3 and about a 17% increase in expected time in State 0.

The effects associated with early WorkFirst participation, with the reservations discussed at the bottom of page 14, show quite a different pattern from those attributable to JOBS. The largest effect is a preferential movement from State 3 to State 0; there is about a 40% increase in the expected time in State 0 (for exit to State 3) and about a 27% reduction in time in State 3 (for exit to State 0). While other WorkFirst effects are smaller, they indicate a preferential movement from State 3 to State 2, and also a movement from State 2 to State 1.

Figure 17 simplifies the results shown in Figure 16 by converting to the net flows associated with each program impact. At each state boundary there is movement in both directions, but if the program impacts on these flows are quantitatively different the impact will be associated with a net flow in one direction. For example, consider the State 1 – State 2 boundary for the CSE effect in the 93Q4 cohort in Figure 16. Those with *CR* are expected to spend on average 42.6% more time in State 1, which means that the flow from State 1 to State 2 is reduced for those with *CR*. But since the opposing flow is not affected by *CR*, the net flow result associated with *CR* relative to *CI* is a flow from State 1 towards State 2. But it must be emphasized that this is because of a reduced recidivism rate rather than an increased rate of welfare exit.

The net flows are shown in Figure 17, and within each four-state representation the size of the arrow indicates the relative magnitude. Thus for all three cohorts the net flow towards off welfare associated with *CR* is stronger for those who are working. The strongest net flow associated with JOBS in both the 93Q4 and the 95Q4 cohort is for finding work while on welfare. The strongest net flow associated with early participation in WorkFirst is for welfare exit without employment.

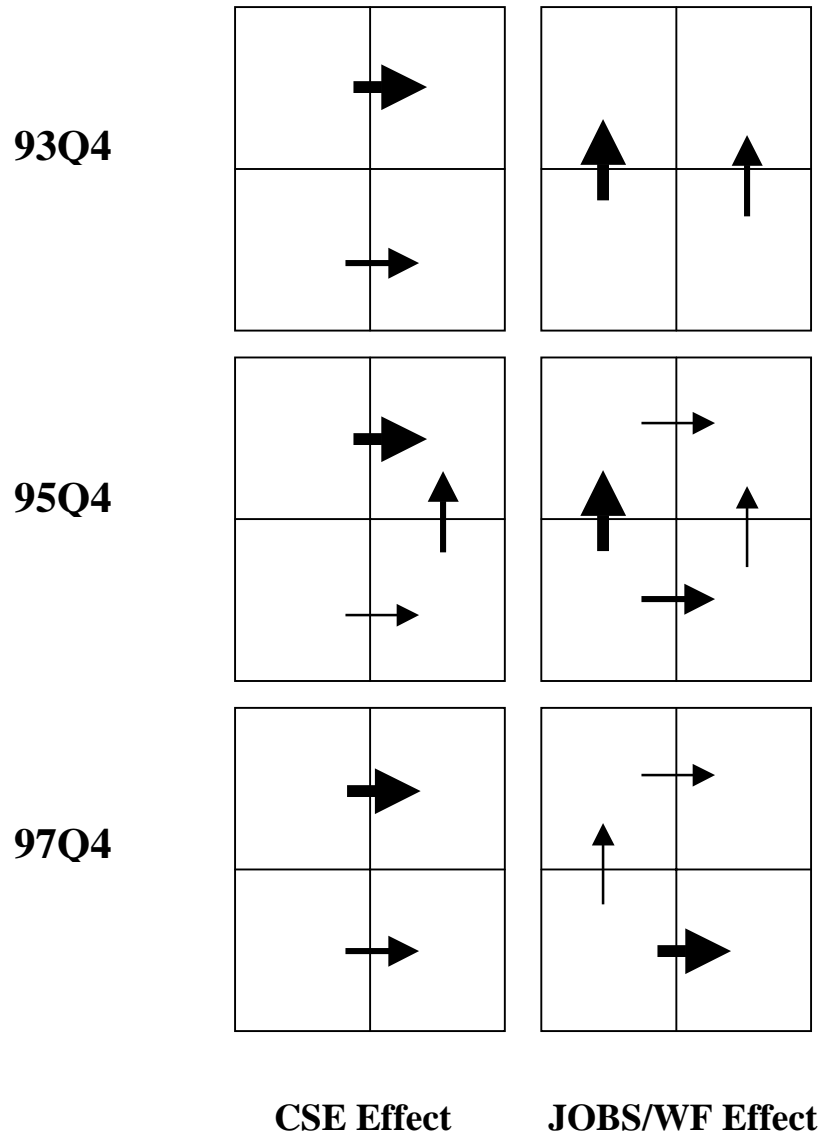


Figure 17: Impacts on Client Net Flow - Derived from Figure 16

In this Figure we further summarize the results shown in Figure 16. For example, Figure 16 shows that one CSE effect for 93Q4 is a slowing of the transition from State 1 to State 2. But since the rate of the reverse transition, from State 2 to State 1, is unaffected the result will be a net flow from State 2 to State 1. This is shown here as an arrow, and within each unit the size of the arrow indicates the relative magnitude of the effect. Thus for all three cohorts the net flow towards off welfare associated with *Regular CSE* is stronger for those who are working.

Joined Cohort Analyses: Client Flow Outcomes

Outcomes by Year

As in the work and welfare outcomes section we begin with an overview comparing the three cohort selection years, controlling for demographics, work history, welfare history, and regional economic conditions over time.

Table 3 gives the intrinsic rates (hazards) for each of the twelve events in the model. The method for obtaining these rates has previously been described (Formoso, 1999 and 1999a). The values previously reported for the 1993 cohort were for clients not in CSE and not in JOBS, and are thus somewhat different than those reported in Table 3, which are for all clients. The fastest rate in each of the cohorts is the 2 to 1 transition (t21), and the transitions involving changes in both work and welfare (t20, t13, t31, and t02) are much

Table 3: Controlled Intrinsic Rates (Hazards) for Work and Welfare Transitions from Joined Cohort Analysis

Mean number of events per individual per month for the indicated transition. This analysis included all individuals in all three cohorts and the rates in this Table are average expected values for all individuals in each cohort. The rates given here for the 93Q4 are thus somewhat different than previously reported (Formoso, 1999 and 1999a) where the values were average expected values for clients who were not in the CSE data and had no prior JOBS entry (the reference category in that study).

A rate less than one may suggest the difficult concept of experiencing a fractional event in a month. There are two ways around this: 1) applied to a group of individuals the hazard gives us the fraction of the group expected to experience the event in a month – the value of 0.14 for t21 for 93Q4 tells us that 14% of the individuals in State 2 at the beginning of the month are expected to exit to State 1 by the end of the month; 2) inverting the hazard rate (one divided by the hazard) will give us the average expected spell length for the indicated transition – $1/0.14$ for t21 for 93Q4 tells us that for the 93Q4 cohort the average spell in State 2, for exit to State 1, was about 7 months.

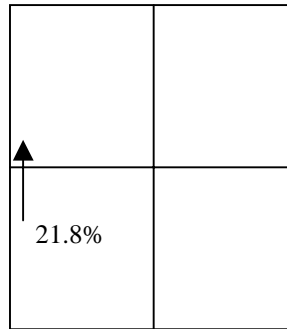
Event	93Q4 rate	95Q4 rate	97Q4 rate
t21	0.140	0.132	0.118
t23	0.064	0.059	0.061
t32	0.033	0.040	0.076
t30	0.032	0.036	0.050
t10	0.032	0.033	0.039
t03	0.030	0.032	0.039
t01	0.025	0.029	0.029
t12	0.027	0.027	0.037
t20	0.005	0.005	0.006
t13	0.004	0.004	0.005
t31	0.002	0.002	0.003
t02	0.001	0.002	0.003

slower than any of the other events. While there are differences in the estimated rates from cohort to cohort, the pattern of rates, and the ordering of the rates are generally consistent across the three cohorts.

Next we compare the effect of year on client movement, using direct output from SAS PHREG. This yields better confidence limits than determining percentage change from the values in Table 3. These results are shown in Figure 18. The only significant difference for 1993 relative to 1995 is a 22% longer residence in State 3, for exit to State 2. For 1997 relative to 1995 the residence time in State 3 is reduced by about 48%, for exit to State 2. This is also seen in Table 3 for the t32 rates: 0.040 for 95Q4 and 0.076 for 97Q4. Thus after 97Q4 welfare clients are obtaining employment while on welfare at a faster intrinsic rate than in either 1993 or 1995 follow-up. Expected time in State 2, for exit to State 1, may however be somewhat longer in 1997 relative to 1995. The 12% increase is marginally significant, but there is a clearly significant 26% reduction in expected time in State 1, for exit to State 2. These effects at the State 1 – State 2 boundary are also seen in Table 3: from 1995 to 1997 the intrinsic rate t21 is reduced from 0.132 to 0.118 and the intrinsic rate t12 is increased from 0.027 to 0.037. Both of these effects may be related to the higher income disregard under WorkFirst. There also appears to be a movement towards State 0 in 1997 relative to 1995. There is a marginally significant 15% decrease in expected residence time in State 1, for exit to State 0, and an imbalance in the increased churning between State 3 and State 0. Movement towards State 0 in 1997 may be related to the 60 month time limit – clients may be choosing not to use welfare even if they are not employed.

The bottom section of Figure 18 shows the net flows for the 97Q4 cohort relative to the 95Q4 cohort. There are strong net flows towards State 2, and weaker net flows towards State 0.

93Q4



97Q4

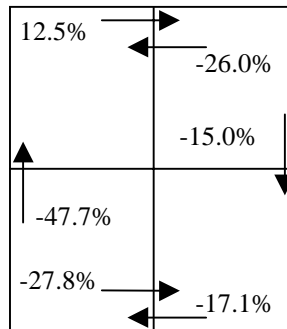
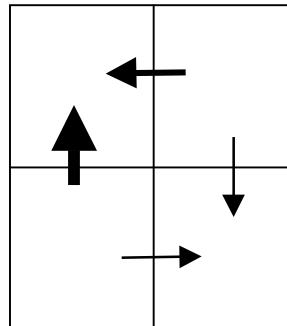
97Q4
Net
Flow

Figure 18: Net Impacts of Cohort Selection Year on Client Flow Outcomes (Joined Cohort Analysis)

Comparing 93Q4 cohort with 95Q4 cohort for all clients, top; and comparing 97Q4 cohort with 95Q4 for all clients, bottom two units. The values shown are percent difference in expected mean spell length for the indicated event. See Figure 1 for the definition of states and state labels. See Figures 16 and 17 for additional details.

Outcomes by Year and Program

We obtain a controlled comparison of program impacts across the three cohorts by combining the program indicators with the year indicators and repeating the analysis. The results thus all come from one analysis and are controlled for regional economic conditions. All results are relative to *CI* without JOBS for the 95Q4 cohort, which was used as reference. These results are presented only as net flows in Figure 19. There are some differences between Figure 17, for analyses by single cohort, and Figure 19, for joined cohort analysis. However the dominant net flow associated with *CR* relative to *CI* is still a net flow from State 2 to State 1. The dominant net flow associated with JOBS is still a net flow from State 3 to State 2.

The biggest difference between Figures 17 and 19 is the net flow associated with early participation in WorkFirst - with the additional controls implied in Figure 19 the only net flow associated with early participation in WorkFirst is a flow from State 3 to State 2. Another difference created with the additional controls implied in Figure 19 is that in all three cohorts the CSE effect is associated with a net flow towards work. In 95' and 97' there are strong net flows from State 0 towards State 1.

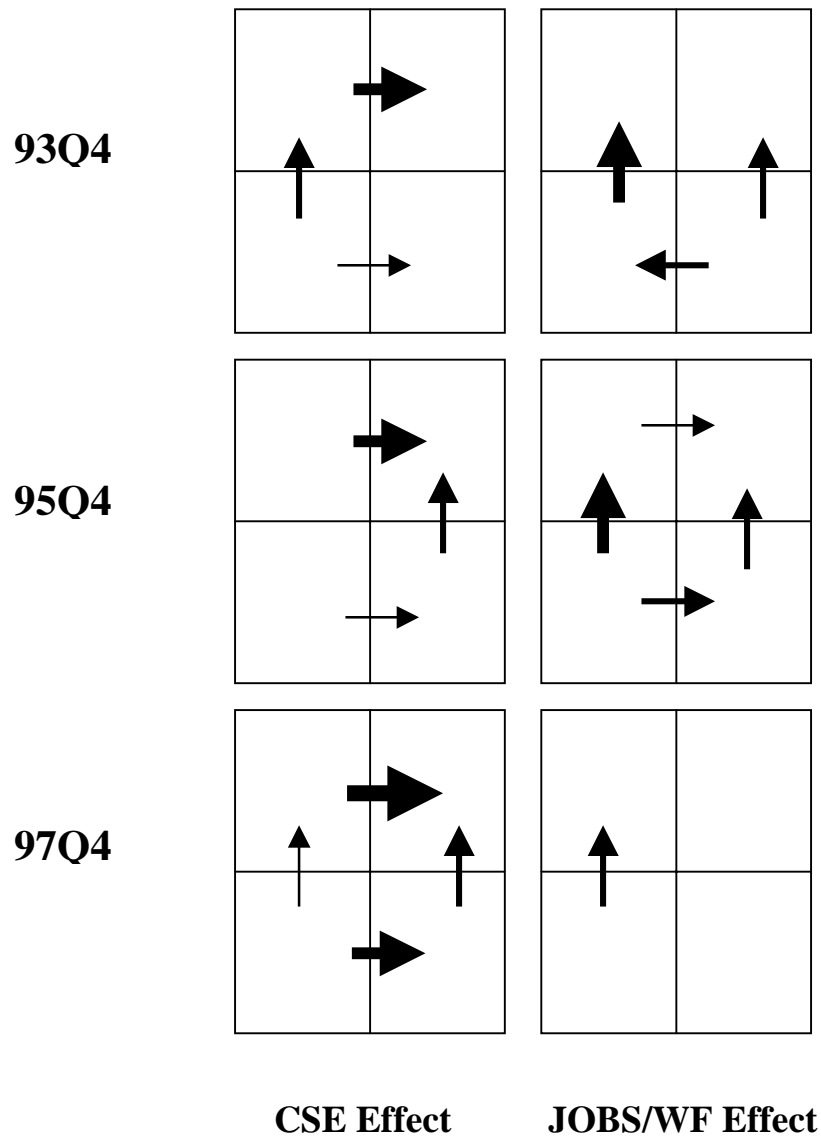


Figure 19: Impacts on Client Net Flow - Derived from Joined Cohort Analysis

These results are controlled for changing economic conditions and thus provide a more fair comparison of flow impacts across the three cohorts. See Figures 16 and 17 for additional details.

Summary and Reconciliation of Program and Period Impacts

Impact of Time Period

In the time period comparisons, the most interesting part is comparing follow-up for adults who were on welfare in 97Q4 to follow-up for adults who were on welfare in 95Q4. Figures 11 and 12 illustrate the differences in work and welfare outcomes, and Figure 18 illustrates the differences in client flows during the respective follow-up quarters.

Figure 11b shows that by the 5th follow-up quarter adults who had used welfare in 97Q4 had a probability of being on welfare about 8% less than adults who had used welfare in 95Q4. But Figure 12b shows that the decrease in welfare probability was only for clients who were not working; for clients who were working the probability of being on welfare in the 5th follow-up quarter was about 20% higher for adults who had used welfare in 97Q4 than for adults who had used welfare in 95Q4.

Figure 11d shows that adults who had used welfare in 97Q4 had a probability of working averaging about 35% greater over the five follow-up quarters than adults who had used welfare in 95Q4. Figure 12d, however, shows that the increase in work probability was only for clients who were on welfare, averaging about a 65% increase in the probability of working over the five follow-up quarters. For clients who were off welfare the probability of working was about the same, or a little less, for adults who had used welfare in 97Q4 compared to adults who had used welfare in 95Q4.

These results are consistent with the net flows shown in Figure 18. Relative to adults who had used welfare in 95Q4, adults who had used welfare in 97Q4 had strong net flows towards State 2, welfare and work. In addition there are smaller net flows towards State 0, off welfare without work. Thus, relative to the follow-up period after 95Q4, in the follow-up period after 97Q4 cohort adults who were working (States 1 and 2) had a net flow from State 1 to State 2, that is towards being on welfare. State 2 was also increasing due to a net flow from State 3 to State 2, and State 1 was decreasing from a net flow from State 1 to State 0. Clients who were not working (States 0 and 3) had a net flow from State 3 to State 0, that is towards being off welfare. State 0 was also increasing due to a net flow from State 1 to State 0, and State 3 was decreasing due to a net flow from State 3 to State 2. In the same way clients who were on welfare (States 2 and 3) had a net flow towards State 2, that is working. Clients who were not on welfare (States 0 and 1) had a net flow towards State 0, that is not working.

Impact of Child Support

Figure 14 shows the most detailed results for work and welfare outcomes associated with a child support effect. Figure 19 will be used to discuss client flow effects associated with child support. Both Figures give results for all three cohorts included in a single analysis, controlled for changes in economic conditions across time, referenced to those in the 95Q4 cohort who had *Irregular CSE* and had no prior JOBS entry.

Figure 14 shows a consistent effect on welfare outcomes for those who are working. By the 5th follow-up quarter there is a 15% to 20% decrease in the probability of being on welfare for *CR* relative to *CI*. The effect on welfare outcomes for those who are not working is near zero during the 93Q4 and 95Q4 follow-up periods, but for 97Q4 follow-up the effect is a decrease in welfare probability similar to that seen for those who were working.

The effect shown in Figure 14 for work outcomes for those on welfare is a small but inconsistent decrease in the probability of working for *CR* relative to *CI*. The effect on work outcomes for those off welfare is a consistent increase averaging 10% to 20% across the three cohorts over the five follow-up quarters.

The child support effect on welfare outcomes for those working is easily consistent with the net flow patterns seen in Figure 19. For all three cohorts there is a strong net flow from State 2 to State 1.

While there is a net flow from State 3 to State 0 seen in all three cohorts, in Figure 14 only the 97Q4 cohort shows a significant decrease in the probability of being on welfare for those without work. Figure 8, which shows thirteen follow-up quarters for the 93Q4 cohort, may suggest a decrease in probability of being on welfare occurring at a later time. In addition, the child support net flow from State 3 to State 0 is much stronger in the 97Q4 follow-up period.

The net flow patterns from Figure 19 are consistent with the increased probability for work for those off welfare shown in Figure 14. The child support net flow from State 2 to State 1 is always stronger than the child support net flow from State 3 to State 0. In addition, in 95Q4 and 97Q4 follow-up there is a strong net flow from State 0 to State 1. Custodial parents off welfare are finding work faster and staying employed longer if they have regular child support payments.

The stronger child support net flow from State 2 to State 1 also can lead to the child support effect on work for those on welfare seen in Figure 14. Since those who are working on welfare (State 2) have a faster net flow off welfare, this will tend to diminish State 2 relative to State 3. Opposing this effect in 93Q4 and 97Q4 follow-up is a net flow from State 3 to State 2.

Impact of JOBS

Figure 15 shows the most detailed results for work and welfare outcomes associated with a JOBS effect. Figure 19 will be used to discuss client flow effects associated with JOBS. Both Figures give results for all three cohorts included in a single analysis, controlled for changes in economic conditions across time.

Figure 15 shows that during 93Q4 follow-up prior entry to JOBS was associated with an increased probability of welfare use both for those working and for those not working. Figure 8 suggests that at later times in 93Q4 follow-up JOBS was associated with a decrease in welfare probability for both groups. Figure 15 shows that during 95Q4 follow-up the turn-around for welfare probability for those working occurs at an earlier time, and for those

without work the welfare probability steadily decreases reaching about a 25% decrease in the 5th follow-up quarter.

Work outcomes associated with JOBS are strong with both cohorts. For those on welfare in the 5th follow-up quarter there was about a 45% increase in the probability for work for the 93Q4 cohort, and about a 120% increase in the probability for work for the 95Q4 cohort. For those off welfare the impacts for the two cohorts are comparable, averaging about a 20% increase in the probability for work across the five follow-up quarters.

The client net flow patterns associated with JOBS in 93Q4 follow-up, shown in Figure 19, are consistent with an increased probability to be on welfare for those working. The net flow from State 3 to State 2 is stronger than the net flow from State 0 to State 1. The build-up in State 2 is not necessarily a bad thing, however. It can be seen from Table 3 that the State 2 to State 1 transition is by far the fastest transition in the work and welfare model. We have previously shown that expected welfare exit rates from State 2 can be much faster than expected welfare exit rates from State 3 (Formoso, 1999 and 1999a).

For those with no work the 93Q4 JOBS welfare outcome effects seen in Figure 15 could be the result of opposing net flows seen in Figure 19. Likewise, the 95Q4 JOBS welfare outcomes seen in Figure 15 could be consistent with the system of opposing net flows seen in Figure 19.

The work outcomes associated with JOBS in Figure 15 are much clearer, and seem to be adequately explained by the strong net flows from State 3 to State 2 and from State 0 to State 1 seen for both cohorts in Figure 19.

Impact of WorkFirst

The impact of WorkFirst is difficult to assess in this study. This is mainly because the comparison group for those who had began WorkFirst participation – those who had not started WorkFirst participation – would largely begin participation during the follow-up period. This structure, however, was necessary to keep the individual cohort studies parallel. In addition to this, 97Q4 was very close to the beginning of WorkFirst implementation when many things were changing; it is not clear that any adequate study could be made under such conditions.

Perhaps the clearest view of WorkFirst impact is the time period comparison already discussed above in this section. This gives us an overall view of 97Q4 follow-up compared to 95Q4 follow-up. But everything not specifically controlled for is included in this overall difference. The difference between WorkFirst and JOBS is part of this, but that difference is not specifically delineated. While work and welfare outcomes are more favorable in the TANF period, relative to AFDC, Figure 12d does indicate that 97Q4 welfare adults who exit welfare are not necessarily finding work, and Figure 12b indicates that 97Q4 welfare adults who find work are not necessarily exiting welfare, relative to 95Q4 welfare adults. As discussed above, the flow results corroborate this view.

Use of Other State Services

We have previously suggested (Formoso, 1999) the importance of controlling for use of other public services which may also influence the outcomes of interest. We now have preliminary results for service programs within Washington State's Department of Social and Health Services (DSHS).

Custodial parents from the 93Q4 cohort (N=69,933) were cross-matched with the fiscal year 1994 Needs Assessment Database (NADB) to determine use of other DSHS programs by each client. The NADB contains individual level data for 262 separate DSHS programs. At present, due to confidentiality issues, we have access only to summary count data from the cross-match. The number of programs used per individual custodial parent ranged from 0 to 90 with an average of about 12.

We use the number of DSHS programs accessed by the custodial parent as one of the explanatory variables in a logistic analysis for the probabilities in the four-state work and welfare model, and in a survival analysis for the rates of movement between states. This allows us to isolate the expected effect (controlled for demographics, regional location, work history, and welfare history) of differences in program usage on work and welfare outcomes, and on client flow outcomes.

The logistic results suggest that as the number of DSHS programs used increases the probability of being on welfare increases and the probability of working decreases. The survival results are in agreement, showing increasing recidivism rates and increasing rates of job loss as DSHS program usage increases.

We have recently completed data share agreements which allow us to have individual level data. These detailed results will be reported at a later time.

Persistence of Regular CSE Collections

While we have shown an association between *Regular CSE* and favorable work and welfare outcomes, the categorization of CSE collections is based on data from a single quarter and only two pieces of information for each custodial parent. It would be expected that those with *Regular CSE* in one quarter would be likely to also have *Regular CSE* in adjacent quarters. This section presents results on the persistence of *Regular CSE* using survival analysis techniques with longitudinal data covering fifteen quarters.

As in previous work (Formoso, 1999) we define three CSE levels: *CN*, custodial parent not found in CSE data for that quarter; *CI*, in CSE data for that quarter with *Irregular CSE*; and, *CR*, in CSE data for that quarter with *Regular CSE*. Following the 93Q4 cohort in the longitudinal CSE data, we see in Figure 20 that the percentage with *CR* is fairly constant at about 6% through the fifteen quarters. This is about 10% of the custodial parents in the cohort. These are average unadjusted levels, with no consideration of possible explanatory factors.

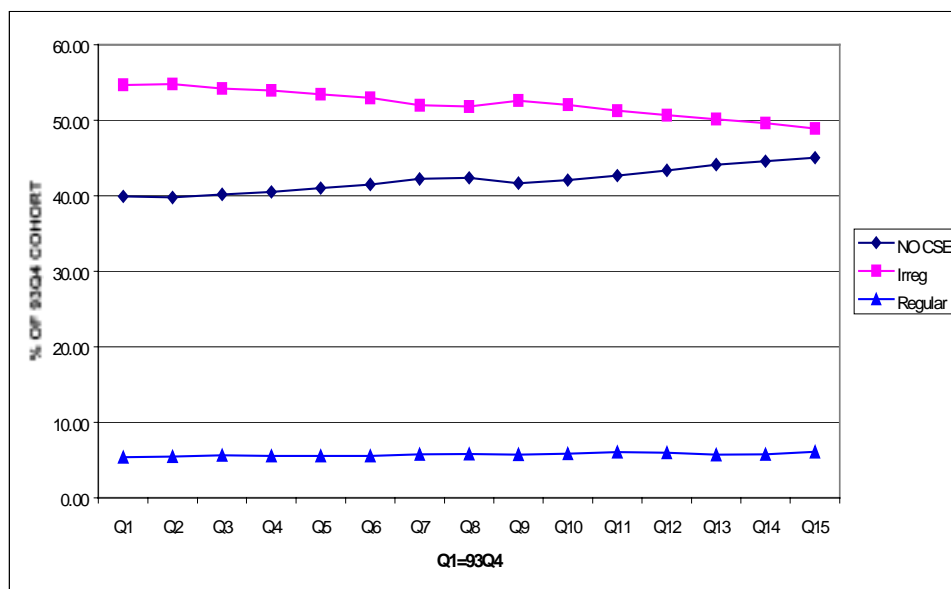


Figure 20: CSE Classification through 15 Quarters for 93Q4 Cohort

Quarterly classification of regularity of CSE payments for 116,377 adults in 93Q4 cohort. No CSE – not in CSE data as custodial parent in that quarter; *Regular CSE* – for that quarter monthly order amount greater than \$0 and total arrearage debt less than twice monthly order amount; and, *Irregular CSE* – in CSE data as custodial parent for that quarter but do not meet criteria for *Regular CSE*

However, looking at individual movement between states, using survival analysis, suggests that *Regular CSE* is not a stable situation. Figure 21 shows survival curves for each transition

in this system, again without consideration of possible explanatory factors. Figure 22 helps identify the specific events.

The shortest survival, or the fastest transition, seen in Figure 21 is tRI, the change from *CR* to *CI*. The other exit event from *CR*, tRN, is much slower, and the events leading to *CR*, tNR and tIR, are also much slower. Approximate intrinsic rates (hazards) can be obtained from the survival curves, and are listed in descending order in Table 4.

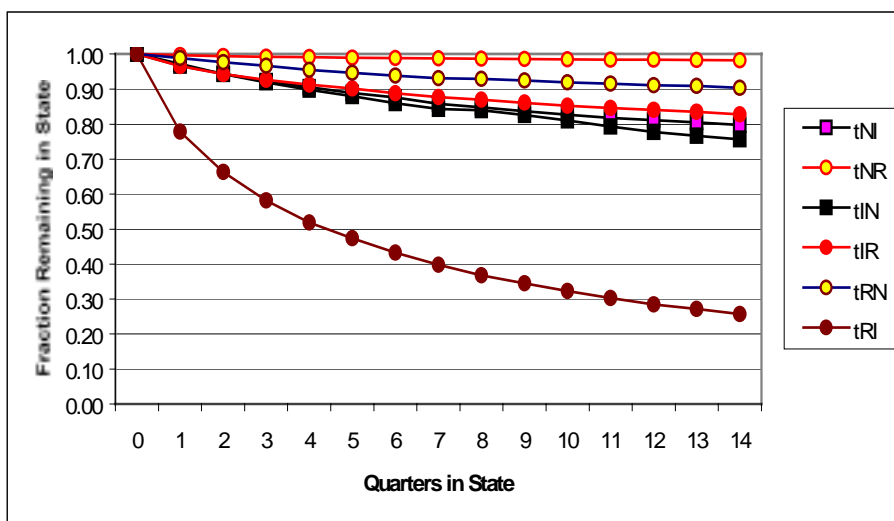


Figure 21: Survival Curves for CSE Regular Payments Model

Overall expected spell length for transitions in CSE Regular Payments Model (see Figure 22 for model and Figure 20 for state definitions), without consideration of explanatory factors. For example, the curve for tRI represents the fraction surviving in the state of *Regular CSE* for the transition to *Irregular CSE* at increasing spell durations.

For an example in reading Figure 20, the curve for tRI crosses the 0.50 Fraction Remaining line at about 4.5 Quarters in State. This means that about 50% of spells in the Regular CSE state are shorter than 4.5 quarters and about 50% of spells in Regular CSE are longer than 4.5 quarters; that is, the median spell time in Regular CSE is about 4.5 quarters. Median spell times for all the other transitions are much longer than the 15 quarter observation time.

These numbers suggest that individuals entering *Regular CSE* will rarely enter from *CN*. The intrinsic rate for tNR is about 1/10th the rate for tIR. Likewise individuals leaving *Regular CSE* will more often exit to *Irregular CSE*. The intrinsic rate for tRI is about 10 times the rate for tRN. The mean residence time in *Regular CSE* collections appears to be about 8 quarters (the inverse of rates for tRN+tRI, $1/(0.011+0.123)$). The mean residence time in *Irregular CSE* appears to be about 60 quarters.

Our definition of *Regular / Irregular CSE* only uses monthly order amount (MOA) and total arrears (TARRS) data, so transitions between *Regular* and *Irregular* collections may occur via a change in MOA, in TARRS, or in both.

Table 4: Intrinsic Rates (Hazards) for CSE Regular Payments Model

Mean number of events per individual per month for the indicated transition. See Table 3 legend for additional discussion of hazard rates; see Figure 22 for definition of events.

Event	Rate
tRI	0.123
tIN	0.024
tNI	0.021
tIR	0.016
tRN	0.011
tNR	0.002

Transitions from *CI* to *CR* may occur through an increase in MOA (so that TARRS is no longer greater than twice MOA), and/or through a decrease in TARRS. However, 78% of the transitions from *CI* to *CR* over the fifteen quarters of data are due to a decrease in TARRS with no increase in MOA, while 22% of *Irregular* to *Regular* transitions do show an increase in MOA.

Transitions from *CR* to *CI* may occur if MOA is set to 0, if there is an increase in TARRS, or if MOA is decreased but still more than \$0 (so that TARRS becomes more than twice MOA). 82% of transitions from *CR* to *CI* over the fifteen quarters are due to an increase in TARRS with MOA greater than \$0; 17% are due to MOA=\$0; and 1% show no increase in TARRS, but a reduced MOA.

Thus the most important factor, accounting for about 80% of all transitions between CR and CI, is a change in the total arrearage debt. In other work we are investigating patterns of arrearage behavior; this will be reported at a later time.

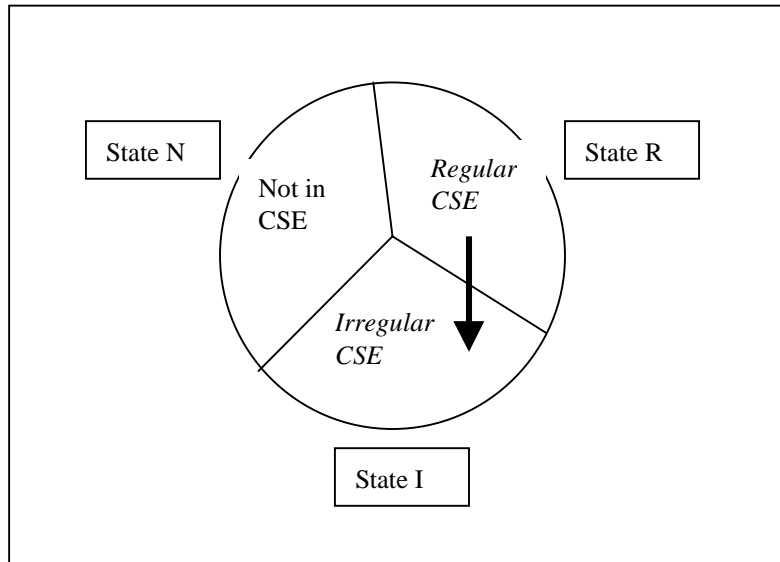


Figure 22: CSE Regular Payments Model

Model used in analyses for Work, Welfare, and Client Flow Outcomes; and for analysis of persistence of *Regular CSE*. See Figure 20 for State definitions. Arrow shows the transition from *Regular CSE* to *Irregular CSE* (tRI), the main pathway by which custodial parents leave the state of *Regular CSE*.

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Appendix

Data Sources and Preparation

State administrative databases were the only sources of information used in all analyses. The Office of Financial Management (OFM) Eligibility File provided information on monthly welfare use from 1986 to the 1st Quarter of 1999. This file was also used to obtain client demographic data - gender, age, race, primary language, number in family, disability status, and location. Quarterly earnings records from two years prior to the selection Quarter to the 1st Quarter of 1999 for selected individuals were obtained from the Employment Security Department (ESD) Wage Tax File. Data on JOBS from State Fiscal Year 1993 to State Fiscal Year 1996 was obtained from the JOBS Automated System (JAS) jointly administered by ESD and the Department of Social and Health Services (DSHS). Data on WorkFirst participation was also derived from JAS via a file provided by the Washington State Institute for Public Policy (WSIPP). Child support enforcement data for custodial parents was obtained from historical extracts of the Support Enforcement Management System (SEMS) of DSHS, Division of Child Support (DCS). Social Security Numbers (SSN) were used for matching across data files.

Welfare use history was converted to adult use only, with only three possibilities in each month - no use, 1-parent case, or 2-parent case. For the 3 months of the selection quarter these three possibilities were maintained, otherwise monthly welfare history was collapsed into use, or no use, of welfare. Individuals were classified as using welfare in a quarter if any monthly use occurred in that quarter. Cohorts were selected as all adults who used welfare in the selection Quarter. Prior welfare history for selected adults was obtained as the sum of months welfare used in the two years prior to the selection quarter.

Quarterly work history for selected individuals was obtained by classifying individuals as working in the Quarter when there were any ESD reported earnings, otherwise individuals were classified as not working in the Quarter. Previous earnings history was obtained as the average Quarterly ESD reported earnings in the two years prior to the selection Quarter.

Using the four-state model shown in Figure 1 state residence in each quarter, or in each month, was then obtained using the welfare status and work status for each individual.

JOBS data was used to extract dates of entry into the program for each matched individual. Where there was more than one date of entry for an individual, only the earliest date of entry was kept. Date of first participation in WorkFirst was included in the file obtained from WSIPP. Individuals were classified as with early participation in WorkFirst if this date was in 1997.

Custodial parent monthly order amount (MOA) and total arrears (TARRS) were extracted from CSE data. When a custodial parent appeared on more than one case, both MOA and TARRS were summed for all cases. When a cohort SSN was found in custodial parent CSE data, the individual was classified as in CSE; and classified with *Regular CSE* when MOA was

greater than \$0.00 and TARRS was less than twice MOA. An individual in CSE, but not meeting the criteria for *Regular CSE*, was classified with *Irregular CSE*.

Program indicator variables were obtained from CSE status and JOBS status or WorkFirst status.

Methods

Logistic regression was used to fit the quarterly state residence in follow up quarters to explanatory variables. This allowed calculation of the controlled probabilities discussed in the main body of this report. Details of the procedure and the generation of actual cost estimates from logistic results are given in Formoso, 1999.

For survival analysis we used a monthly basis since welfare status was known at this level. With this basis, work status was constant for the three months of a quarter. The survival analysis procedure fits the duration of spells for individuals in the cohort to a probability based on explanatory variables. Details of the survival procedures are given in Formoso, 1999 and 1999a.